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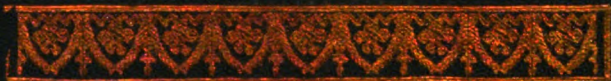


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# Annual Report of Nebraska State Board of Agriculture

BY W. R. MELLOR

1906-1907



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# ANNUAL REPORT

NEBRASKA

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## State Board of Agriculture

FOR THE YEAR 1906-1907.

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PREPARED BY

W. R. MELLOR, SECRETARY.

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LINCOLN, NEBRASKA:  
STATE JOURNAL COMPANY.  
1907.





STATE BOARD OF AGRICULTURE.

OFFICE OF SECRETARY,

LINCOLN, NEB., January 31, 1907.

*His Excellency George Lawson Sheldon, Governor of Nebraska:*

SIR: In compliance with the law in this case made and provided, I hereby transmit the annual report of the Nebraska State Board of Agriculture for the year 1906-1907.

Very respectfully,

W. R. MELLOR, Secretary.

(RECAP)

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### NOTICE.

In order to bring the date of this publication up to the year in which it is published, we have taken the liberty to date this report 1906-1907, so that hereafter the dates may correspond with its publication.

Respectfully yours,

W. R. MELLOR, Secretary.

# PROCEEDINGS.

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## SEMI-ANNUAL MEETING.

LINCOLN, NEB., September 6, 1906.

The semi-annual meeting of the Nebraska State Board of Agriculture met this 6th day of September in the office of the Board of Managers at the Administration Building on the State Fair Grounds, according to law and pursuant to notices given.

The roll-call showed the following members present: Messrs. Youngers, Filley, Roberts, Russell, Mellor, Rudge, Cook, Hervey, Bassett, Dinsmore, Hendershot, Mickey, Williams, Leonard, Haws, Lewelling, Ollis, Searle, Cole, Mann, Arnold, Apperson, Dickman, Morse, Atkins, Foster and Wolcott.

Absent: Messrs. Caley and Riley.

On motion by Mr. Dinsmore, it was ordered that President Peter Youngers represent the Nebraska State Fair Association at the meeting of the National Fair Associations to be held in Chicago in December.

On motion by Mr. Atkins, a resolution was passed that the full membership of the Nebraska State Board of Agriculture attend the Illinois State Fair at Springfield the first week in October.

On motion by Mr. Hendershot, it was carried that each member should bear his own expense on trip to Springfield and the Secretary should take up the matter of rates with the railroad companies and notify the membership as soon as possible.

On motion, Mr. J. B. Dinsmore was elected as a delegate to attend the American Shorthorn Breeders' Association meeting to be held in Chicago the first week in December.

After remarks on the needs of the Board for better facilities along the lines of accommodations for exhibits and patrons led by Messrs. Hervey, Cook, Haws, Atkins, Ollis and others, the meeting adjourned.

W. R. MELLOR, Secretary.

## ORGANIZED AGRICULTURE.

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Representatives of the various associations constituting "Organized Agriculture" met pursuant to call in the office of Director E. A. Burnett at the University farm, Tuesday, October 16, 1906. The following persons were present: Director E. A. Burnett, Mr. S. C. Bassett, Mr. W. R. Mellor, Mr. W. G. Unitt, Mr. R. H. Searle, Mr. Alvin Keyser, Dr. C. A. McKim, Dr. A. T. Peters, Professor A. E. Davisson, Mr. Val Keyser, Rev. J. W. Seabrooke, Mr. L. M. Russell, Prof. A. L. Haecker.

Dr. Peters read the minutes of last meeting, which were approved.

The gentlemen present represented societies as follows:

Mr. W. G. Unitt, of Seward, secretary-treasurer of the Nebraska Duroc-Jersey Breeders' Association, and secretary of the Nebraska State Swine Breeders' Association.

Mr. Ralph H. Searle, of Edgar, president of the Association of Agricultural Students; secretary of the Nebraska Improved Live Stock Breeders' Association.

Prof. Alvin Keyser, the Nebraska Corn Improvers' Association.

Dr. C. A. McKim, president of the Nebraska State Veterinary Medical Association.

Rev. J. W. Seabrooke, University Place, from Nebraska State Poultry Association.

Mr. Val Keyser, Farmers' Institute Conference.

Prof. A. E. Davisson, Association of Agricultural Students.

Mr. W. R. Mellor, secretary of the Nebraska State Board of Agriculture.

Prof. A. L. Haecker, member of Board Nebraska Dairymen's Association.

Mr. L. D. Stilson, secretary of the Nebraska Park and Forestry Association.

Mr. S. C. Bassett, secretary of the Nebraska Dairymen's Association.

Director E. A. Burnett, president Farmers' Institute Conference.

Dr. A. T. Peters, secretary of "Organized Agriculture."

Mr. L. M. Russell, secretary of the Nebraska State Horticultural Society.

It was voted that an Auditing Committee of three be appointed to audit the accounts of the last meeting. The committee appointed was Mr. Mellor, Mr. Stilson, and Mr. Haecker.

The minutes of the last meeting were read by the Secretary, Dr. Peters, and were approved.

The Auditing Committee of three brought in a report, in which they approved the Secretary's report of receipts and expenditures, there being a deficit of \$5.84 for the last two years.

On motion of Director Burnett, seconded by Professor Haecker, the report of the Auditing Committee was accepted and the committee discharged.

Dr. Peters stated that last year the committee had been unable to secure John Clay, of Clay-Robinson, on account of his absence from the United States; Henry Wallace had a previous engagement.

Dr. Peters stated that for the evening sessions very strong men should be secured. First, it is a good advertisement to have strong men. Secondly, the show people of the city have found that during that week there is an immense lot of people here and that if they can attractively advertise they can secure quite a number of those people, and for that reason we must have strong men on our evening program to counteract such attractions. Further, the elderly people that come here come to see some noted man, and altho he may not give an eloquent address, yet they are happy to have heard him. These men from abroad, in addition to bringing a crowd here, also have a good word to say for Nebraska after they leave.

On motion of Professor Haecker, seconded by Mr. Stilson, it was voted to hold the meetings the week that the State Board of Agriculture meets, the week of January 14th.

The following assignment of days and associations was made:

**Monday, January 14, 1907—**

Association of Agricultural Students.

Nebraska State Veterinary Medical Association.

**Tuesday—**

Nebraska State Veterinary Medical Association.

Nebraska State Board of Agriculture, 4 p. m.

Nebraska Duroc-Jersey Breeders' Association.

Nebraska Dairymen's Association.

Nebraska State Poultry Association, evening.

**Wednesday—**

Nebraska Dairymen's Association.

Nebraska State Swine Breeders' Association.

Nebraska State Bee Keepers' Association.

Woman's Section of Organized Agriculture.

**Thursday—**

Nebraska State Poultry Association, evening.

Woman's Section of Organized Agriculture.

Nebraska Improved Live Stock Breeders' Association.

Nebraska Corn Improvers' Association.

Nebraska Park and Forestry Association.

**Friday—**

Nebraska Corn Improvers' Association.

Nebraska Shorthorn Breeders' Association.

Farmers' Institute Conference.



Dr. Peters desired to be relieved of the active management of Organized Agriculture. The work of his department was growing so that he felt he must discontinue the management sooner or later and this year he was not in as good a position as heretofore on account of the work he had in hand. He promised to give all the assistance he could, and tendered his thanks to the men who had had charge of the arrangements for the various associations.

Dr. Peters moved that Mr. Val Keyser, Assistant Superintendent of Farmers' Institutes, be chosen as chairman of the committee to make all general arrangements in regard to the meetings of Organized Agriculture, including the program.

Motion seconded by Mr. Stilson, submitted to vote, and adopted.

The Chair appointed as the other members of the committee Dr. Peters and Mr. Mellor.

Dr. Peters stated that the edition of the large program, containing advertisements, was 10,000 copies year before last, and nearly 9,000 last year. The Dr. wondered if it would not be well to change the plan and print a smaller program without advertisements, which require a considerable amount of looking after. Possibly enough money could be secured from the Commercial Club or from the merchants, without the advertising.

## ANNUAL MEETING.

## OPENING SESSION.

TUESDAY, January 15, 1907, 4:00 p. m.

Meeting called to order by President Peter Youngers, Jr., of Geneva, Nebraska.

President called for the reading of the call for the annual meeting, which was responded to by Secretary W. R. Mellor, as follows:

## NEBRASKA STATE BOARD OF AGRICULTURE.

Office of Secretary, Lincoln, Nebraska, December 8, 1906.

## ANNOUNCEMENT.

The annual meeting of the State Board of Agriculture will be held at Lincoln on Tuesday, January 15, 1907, at 4:00 p. m.

## COMMITTEES.

The following committees appointed by President Peter Youngers, Jr., will meet at the Lindell Hotel, Lincoln, on Monday, January 14, 1907, at 2:00 p. m.

## REVISION OF PREMIUM LIST, RULES AND REGULATIONS.

G. W. Hervey,	S. C. Bassett,	W. Foster,
Omaha.	Gibbon.	Jamaica.
I. W. Haws,	C. M. Lewelling,	
Minden.	Beaver City.	

## AUDITING COMMITTEE.

E. M. Searle, Jr.,	O. E. Mickey,	O. P. Hendershot,
Ogalalla.	Osceola.	Hebron.

## CREDENTIALS AND RETURNS.

L. W. Leonard,	Jos. Roberts,	J. A. Ollis, Jr.,
Pawnee City.	Fremont.	Ord.

## MEMBERS OF THE STATE BOARD.

## MEMBERS WHOSE TERMS EXPIRE JANUARY, 1907.

C. H. Rudge, Lancaster County	O. E. Mickey, Polk County.
J. B. Dinamore, Clay County	G. R. Williams, Douglas County
O. P. Hendershot, Thayer County	L. W. Leonard, Pawnee County

H. L. Cook, Howard County  
 I. W. Haws, Kearney County  
 W. C. Caley, Knox County  
 Elijah Filley, Jefferson County  
 C. M. Lewelling, Furnas County

J. A. Ollis, Jr., Valley County  
 E. M. Searle, Jr., Keith County  
 W. W. Cole, Antelope County  
 Samuel Riley, Boone County

MEMBERS WHOSE TERMS EXPIRE JANUARY, 1908.

Chas. Mann, Dawes County  
 Vincent Arnold, Richardson County  
 S. C. Bassett, Buffalo County  
 W. A. Apperson, Johnson County  
 Geo. F. Dickman, Seward County  
 W. R. Mellor, Sherman County  
 L. Morse, Dundy County

M. B. Atkins, York County  
 Peter Youngers, Jr., Fillmore Co.  
 G. W. Hervey, Douglas County  
 Jos. Roberts, Dodge County  
 W. Foster, Lancaster County  
 R. M. Wolcott, Merrick County  
 E. Z. Russell, Washington County

W. R. MELLOR,  
 Secretary.

PETER YOUNGERS, JR.,  
 President.

ROLL CALL.

Roll call by the secretary was responded to as follows:

OFFICERS.

Peter Youngers, Jr., President, Geneva; Elijah Filley, First Vice-President, Reynolds; W. R. Mellor, Secretary, Lincoln, Neb.

MEMBERS.

C. H. Rudge, J. B. Dinsmore, O. P. Hendershot, O. E. Mickey, G. R. Williams, L. W. Leonard, H. L. Cook, I. W. Haws, W. C. Caley, C. M. Lewelling, J. A. Ollis, Jr., E. M. Searle, Jr., W. W. Cole, Samuel Riley, Charles Mann, V. Arnold, S. C. Bassett, George F. Dickman, M. B. Atkins, G. W. Hervey, Jos. Roberts, William Foster, R. M. Wolcott, E. Z. Russell.

REPORTS OF OFFICERS.

Mr. L. W. Leonard, chairman of Committee on Credentials, stated that he did not think it possible to make a final report this evening.

Secretary Mellor requested that the names of those already presenting credentials be read. After reading of the list by Mr. Leonard, motion was made and carried granting the Committee on Credentials further time to prepare report.

Mr. Youngers: We will now have the address of the President of the Board:

PRESIDENT'S ANNUAL ADDRESS.

*Gentlemen of the State Board of Agriculture:*

The year of 1906 has passed away and with it the history of seasonable weather, enormous crops, satisfactory prices and great advances in agriculture. Values in agricultural lands have reached a figure scarcely dreamed of ten years ago, and sales of farm lands at \$100, or more, per acre are no longer a surprise to agriculturists of Nebraska. Our financial

conditions are such that instead of borrowing money from our eastern friends, to move our immense crops, Nebraska is doing its full share in assisting the east to carry its financial burden.

It is indeed a pleasure to think of the great prosperity that spreads over our entire state, and we feel grateful that this Board has shared in the general prosperity. The past state fair was one of the most successful, from an educational standpoint, ever held in the state.

The agricultural, horticultural, live stock, dairy, machinery and all other exhibits were in perfect harmony and in keeping with the ideal fair. The educational exhibit was most excellent and the results of the exhibits will have their effect upon this and future generations. The citizens of the state appreciate the efforts made to entertain and instruct. The attendance was so large that the management was compelled to notice the small space that comprises the state fair ground. While the grounds were filled to overflowing, the patrons were good natured and pleased and as a result of this patronage we have in our treasury at the present time, the largest surplus in the history of the State Board of Agriculture. [Applause.]

#### IMPROVEMENTS.

During the past year we have built three additional swine barns, in size and style to correspond with the balance of barns on the ground, also cinder walks connecting all the principal buildings. The A. O. U. W. and M. W. A. Orders were assigned permanent locations, and have erected modern buildings that are artistic in design and add much to the appearance of the grounds, and very materially assist in the comfort of the visitors and are a credit to the organizations that have built them.

The Horticultural Society has also assisted in a substantial manner by placing in their buildings ladies' and gentlemen's lavatories, connecting the same with the sewerage system on the ground. The Bankers Life Insurance Company, of Lincoln also built a most attractive theatre building with room to accommodate several hundred people. The moving pictures exhibited were most excellent. This exhibit was free to all visitors to the fair and was patronized by thousands who desired rest and entertainment.

#### AGRICULTURAL COLLEGE.

I had the pleasure of attending the International Live Stock Show held in Chicago last December, and was delighted to see so many people from Nebraska in attendance. I found that our Agricultural College was well represented and made an exceptionally fine exhibit of stock, and the high awards received are evidence of the painstaking care of the management in bringing it to the high standard attained, and all the stock shown by the college was a credit to the state of Nebraska.

#### FAIR DATES.

As your delegate, I attended the annual meeting of American Association of Fairs and Expositions, held in Chicago, December 5 last, and the

date for the Nebraska State Fair was assigned from August 30 to September 6, inclusive, being the same week as last year and immediately following the Iowa State Fair.

#### EXHIBITORS AND CONCESSIONAIRES.

In behalf of the Board I desire to thank the exhibitors and concessionaires for their hearty co-operation in making our fair one of the greatest ever held in the west.

The exhibitors did everything in their power to make it pleasant for the thousands of visitors and the management, while the concessionaires seemed very anxious to please the patrons of the fair and there was no trouble of any kind to mar our pleasure during our stay on the ground.

#### OUR NEEDS UPON THE FAIR GROUND.

More public comfort buildings with sanitary sewerage.

Machinery Hall.

New Fish Building.

Additional room in the Administration Building.

Steel Amphitheatre.

New Agricultural Hall.

Additional cattle and swine barns.

Swine judging pavilion.

More permanent sidewalks.

All the above are urgently required at the present time and should be provided as soon as funds can be secured to build the same.

#### RAILROADS.

The various railroads in the state rendered valuable assistance by running special trains during the fair week, doing all in their power to bring vast numbers of people from all parts of the state to the fair grounds. The large number of coupons detached at the gate show that the roads contributed largely to the success of the fair and their special efforts were appreciated by the management.

#### NEWSPAPERS.

The press of Nebraska has also assisted in many ways to make our fair a grand success. Thousands of columns of good reading matter with their moral support and kind words were appreciated by the Board and we desire to express the thanks of the State Board of Agriculture for their most welcome assistance.

#### SECRETARY'S OFFICE.

The permanent location of the Secretary's office in Lincoln has been accomplished and comfortable location in the Capitol building has been secured, with a fire-proof vault for the safe keeping of the records, making it very convenient to obtain access to the records at any time. The additional work of the Concession department and the location of the machine exhibits was handled through the office of the Secretary with



highly satisfactory results. With the location of the office in Lincoln, there is no loss of time to the exhibitor or concessionaire who desires space.

#### RECOMMENDATIONS.

First. The Board of Managers after a thorough discussion, have decided to ask the present legislature to assist the State Board of Agriculture in securing permanent buildings on the State Fair Grounds, by taking such action as may be necessary to secure a levy of one-eighth of a mill on the taxable property of the state for that purpose. Should such a law be enacted, it would take a number of years to secure the buildings necessary to properly house the exhibits, and I would recommend that the incoming Board of Managers be authorized to prepare a bill for the purpose and secure the introduction of the same during the present session of the Legislature.

Second. We are in need of better accommodations by the Burlington railroad; with improved passenger service to adequately handle the great number of people, we realize that the better the service the more patrons we will have and we trust that before another season this railroad will take such steps as to double the efficiency of its service. We should also have better service by the street car lines. It would be quite an improvement were they to run into the grounds and unload, than to stop where they do at the present time, and it would make it more pleasant for the patrons of the road and this Board. We have some assurance that this will be remedied the coming season, and we trust for its accomplishment prior to the next State Fair.

We would recommend that the matter of better transportation facilities be urged upon both the Burlington and the street railway lines by the incoming administration.

#### SUPERINTENDENTS AND EMPLOYEES.

We feel very grateful for the cheerful and efficient manner in which the superintendents handled the various departments. Every superintendent and employee worked to the very best advantage, performing their various duties faithfully and cheerfully, and it was certainly a pleasure to see them doing their utmost to please and entertain the patrons of the fair.

In conclusion I desire to thank the Board of Managers and each member of the Board for their uniform kindness and their unselfish efforts to assist us in every way possible. We fully realize that it was through the united efforts of all connected with the State Board of Agriculture, that it is possible to pass into history the fair of 1906 as the record breaker in point of exhibits, attendance and surplus in the treasury. [Much applause.]

President Youngers: We will have the reading of the Secretary's report next, please.

Secretary Mellor made the following report:

## REPORT OF THE SECRETARY.

*To the Officers and Members of the Nebraska State Board of Agriculture,  
Greeting:*

The saying "Most successful fair in the history of Nebraska," has been a sentence of common usage during the past five years. In our estimation it is perfectly natural that such a condition should prevail, as our State Fair should be but an index of the prosperity of our people, and as the last fair attained the acme of perfection, as a general success, so have our people attained a degree of opulence unknown to Nebraskans heretofore. The statistics for Nebraska for the year 1906 show the yield of our principal crops, in round numbers, to be

Corn .....	250 million bushels
Oats .....	78 million bushels
Winter Wheat .....	48 million bushels
Spring Wheat .....	5 million bushels
Barley .....	3 million bushels
Rye .....	2 million bushels
Potatoes .....	6 million bushels
Hay .....	2 million tons
Alfalfa .....	1.5 million tons

and the value of the crops to be nearly \$200,000,000, with live stock at \$130,000,000, and the November 12th bank statement shows \$150,000,000 in cash. Think of a community whose people have personal property in these three items alone that approximates almost \$500.00 per capita. Has ever such a modern "Eden" existed before?

If we stop and consider our general prosperity as a people, we cannot fail to realize that the past eight years have been unequalled in regard to the amount of produce raised and prices obtained; and many causes have combined to make this a reality, chief of which have been increased rainfall, the constant employment of labor, and the great armies used by warring nations; the last two being factors causing great demands upon the producing classes.

That the annual fair is a great educator is an established fact. The object lessons there derived reach more people than any and all other methods combined. Each particular department has its mission to perform. It is a great mistake to confirm yourself in the belief that the department in which you are especially interested is the only one entitled to consideration for advancement. The success of the fair depends upon a united effort in all departments. We are sometimes asked the question "How does the fair benefit the agricultural people of the state?" Are you not acquainted with men in your own neighborhood who are raising better horses, cattle, swine, sheep and poultry than they did in years gone by? If you are, where did the incentive for better things come from? Was it not from the spirit of competition fostered in some neighbor by attend-

ing the fair, where he saw, and immediately conceived the ambition to imitate, if not excel. Such an ambition reaches out to a degree which cannot be measured.

At the fair he also sees the best of improved machinery, with experts to explain its use. This opportunity of itself, oftentimes pays many times over for the time and money expended; here he can study the educational features during a portion of the day, and when weary, can be entertained by some of the attractions; here he meets the old friends and forms new acquaintances, and when he returns, he has many stories of the incidents and object lessons seen, with which to regale his friends at home.

There are two things which I most earnestly desire to impress on the mind of every citizen of Nebraska interested in agriculture and live stock—do not fail to attend the state fair, and do not fail to take at least one term in the University School of Agriculture at the State Farm. This advice is especially for the benefit of every citizen of Nebraska who is under the age of 75 years. To the actual farmer this advice is invaluable. If you think you are too busy to come to the State Fair the first week of next September, or to take the eight week term in the school of Agriculture, which begins next January, hire extra help and come; it will pay you big dividends.

If it is a fact that an ambition for better stock, produce and machinery is created at the fair and agricultural school, is it not a good thing for you to attend? Are not the men in your community who aspire to have the best in their particular line referred to as your representative citizens?

#### UNIVERSITY.

The University of Nebraska, through its School of Agriculture and Experiment Station, has done much in recent years to place the agriculture of the state on a higher plane, and to improve the methods in use on the farms of the state. The campaign for the improvement of seed corn and for the extension of the winter wheat area have notably increased the aggregate yields of these two important cereals in the state, until we now occupy the enviable position of third state in the Union in both the raising of corn and winter wheat. This work alone has been worth millions of dollars to our farmers annually. Although corn has been our money crop for years, no one had undertaken to give a careful study of the question relating to its improvement and adaptation until the University took up the question in a thorough manner and gave the results to the people by special corn trains and station bulletins.

The work at the State Farm is calling attention to the need of better live stock to consume the high priced products of our farms, and the experiments in feeding which have called attention to the selection of cheaper and more efficient rations for cattle and swine are of great value to the farmer. These experiments have shown alfalfa to be greatly superior to other forms of roughness when fed with corn, and must encourage

an increased acreage of this valuable crop. The bulletins published on this subject must lead to a more careful study of the whole feeding problem.

In five years the State Farm has produced fifteen premium winners at the Chicago International Live Stock Show, and taken \$1500.00 in premiums. No single exhibitor, either private or public, has exceeded this record. This year the premiums amounted to \$450.00 from six winners out of nine exhibited, the awards being the college championship, the grade Angus champion; first in grade calf; second in yearling Shorthorn; fourth in Hereford special; fourth in two year Angus, and first and second in yearling carcass contest.

Three years ago the University sent a grand champion steer to the International at Chicago. It would seem from the statement of the English judge, Mr. Turner, that they really produced a second grand champion this year with "Ruby Zenoleum," but failed to bring back the honors through the accidents of the show ring. Mr. Turner said, "This steer is the best bullock of the show. I am sorry I did not have the opportunity to make him grand champion." The fact is interesting since it shows that the men in charge not only know the theory of feeding animals but are able to turn out the finished product.

The western station, recently established at North Platte, is but another evidence of the desire of the University to furnish information which will meet the needs of all the people. This station is studying the problem of dry land farming and endeavoring to determine what methods will be successful in a country where crops are often abundant but where failure has been so frequent as to prevent its rapid development. This station has produced good yields of winter wheat and many spring grains, and, after thorough testing, has distributed these widely among the farmers. It is growing alfalfa on the high table lands and is advocating the growth of alfalfa by all the farmers of this region. It is studying the live stock problems of the country in an effort to determine what methods of production may be used by the small farmer and ranchman. The question of pork production on alfalfa and the grains commonly grown in the country is one of the principal problems.

The School of Agriculture has grown in recent years until today its buildings are crowded for its use. Appropriations for more buildings have been asked to make this work effective, and these should be granted. We cannot afford to cripple the school which is educating our farmers and farmers' boys, and sending them back to the farm to become a tower of strength in the improvement of agriculture. The men who are responsible for the agricultural progress of the state must be well educated, broad minded men, who understand the principles of scientific agriculture. No state ever paid too much for its agricultural educational advantages. Today it is not only the duty, but the privilege of every citizen of this state to be a friend to the University and assist in providing all the

necessary facilities to make thorough scholars and special experts in agricultural science. The state has received generous compensation for the money it has expended in the development of its farm through the general increased yields of wheat and corn, and the impetus it has received in general education. This influence will continue and increase with the efficiency of the institution.

#### DAIRY INDUSTRY.

The dairy industry in Nebraska has in the past few years been undergoing a rapid development, and it is interesting to note that this growth has been stimulated largely by the general use of hand separators. The following table will illustrate how rapidly these machines have come into the state and gone into use:

Year.	No. of Separators.	Year.	No. of Separators.
1897 .....	550	1902 .....	10,200
1898 .....	600	1903 .....	18,400
1899 .....	1000	1904 .....	22,000
1900 .....	3000	1905 .....	30,690
1901 .....	4960	1906 .....	33,500

The data here shown have been carefully compiled, and may be depended upon for at least reasonable accuracy. In the year 1905 practically every machine was accounted for, also in 1903. In 1906 some estimating was made based on conservative principles. While the growth has been decidedly large, the past year has seen a falling off in the amount of butter made in the state. This condition has been largely due to the prosperity experienced by so many of our farmers, and the good crop conditions found in the West. The farmers have found that their time is taken up with what they believe larger matters and more important, and have in many cases allowed their herds to go back to range condition and allowed the calves to run with the cows. Another cause for the shrinkage is the low price of butter in the spring of the year, and the resulting discouragement brought to many of the producers who are milking but a few cows. It is to be regretted that such conditions exist, for the season of 1906 will be long remembered as one very favorable to the dairy business. The price, while low in the spring, soon changed to a good price in the fall, and rose rapidly toward the end of the year. The farmers who are practicing fall and winter dairying made a good thing in their business and were well repaid. Increased attention to winter dairying would bring about improved conditions; as it is now, the great bulk of butter is made during the months of May, June and July, when the price is at its very lowest. The present system is also bad, in that there has been very little attention paid to keeping the cows in good milking condition throughout the year. The short milking period experienced is largely due to the breed and the method of handling. The grain is largely fed the hogs and steers, and the milking cows compelled to take what they can get, so, naturally, they have



given poor returns. Much improvement could be brought about in the way of improved methods in the care of handling of cream. It is needless to say that the present conditions are bad, and must be improved if Nebraska butter is to advance in quality.

Those interested are contemplating certain legislation for the benefit of the industry, and hope that a food and dairy commission will be established, and that state inspectors can be employed to work for the betterment of the industry in all particulars.

#### BOYS' ACRE CORN CONTEST.

At our last annual meeting this body appropriated \$150.00 to be distributed among the boys under 18 years of age, growing the greatest number of bushels of corn from one acre. Ninety-seven boys entered and fourteen reported according to the specifications in the instructions.

The amount of corn raised upon reported acres was as follows:

1st, Harry W. Olderog, Gretna.....	8,290	lbs.,	118	bushels	30	lbs.
2d, Roy R. Johnson, Burchard.....	7,772	"	111	"	2	"
3d, P. C. Molgard, West Point.....	6,680	"	95	"	30	"
4th, Alva Fry, Ulysses.....	6,530	"	93	"	20	"
5th, Morace E. Baker, Stromsburg.....	6,505	"	92	"	65	"
6th, C. E. Freiday, Swanton.....	6,240	"	89	"	10	"
7th, Henry Knutsen, Hampton.....	6,115	"	87	"	25	"
8th, Ernest M. Buhler, Sterling.....	5,260	"	75	"	10	"
9th, Wallace Wickizer, Lushton.....	5,060	"	72	"	20	"
10th, Ernest Dreier, McCool Junction....	4,985	"	71	"	15	"
11th, Clarence Drier, McCool Junction.....	4,935	"	70	"	35	"
12th, Verne L. Kauffman, Rokeby.....	4,900	"	70	"		
13th, Dwight L. Kauffman, Rokeby.....	4,840	"	69	"	10	"
14th, Fred M. Rigby, College View.....	3,340	"	47	"	50	"

This last was grown on 134 square rods of ground; the same proportion on 160 rods would yield 3,988 pounds, or 56 bushels 58 pounds.

#### LIVE STOCK.

This department is of especial interest from the fact that it is thought by many to be the chief department of the fair. Each integral part of this exhibit, except sheep, was full to overflowing. Nebraska is naturally located so that it is possible, being the third state in the Union in live stock, to make its Fair the location for the best live stock show in the West, but two things are still lacking—money for suitable premiums and buildings for the display. If the present legislature enact into law the proposed bill for one-eighth mill levy for permanent State Fair buildings it will in time solve this problem, and then it will be no longer necessary for the management to use such close business principles for the obtaining of money at the expense of the exhibitors and press, when its funds can be used for premiums, instead of the double purpose of buildings and premiums as now.

To be a successful exhibitor in some of the departments at our Fair, it is necessary to begin the work of preparation nearly, if not quite a year ahead. Sometimes we hear the expression, "It does not pay." Have you taken this assertion for the truth? We will admit that from a temporary money standpoint it may be correct, but the breeder or exhibitor who cares for a reputation can advertise in no better way, and those exhibitors who are constant in their showing, coupled with honesty and integrity, are the best advertised, and the most successful in their respective lines.

To be a successful exhibitor also carries with it a source of gratification and content which many of the so-called rich men of our country would give fabulous amounts to enjoy. Is it not a false idea that money is the measure of success or recompense?

#### AGRICULTURAL HALL.

The 1906 exhibit in Agricultural Hall was without doubt equal, if not superior to any previous exhibit. Some dissatisfaction was caused by closer scoring than has been customary. Some thought that this was occasioned by the adoption of an exemplified score card, but the score card was identical with that used other years with the exception of places for the minor details of the exhibit, which heretofore had to be carried in the mind of the judge. We believe that the new plan is a success, and will result in greater effort toward excellence.

We still think the state should be divided into four districts and the counties in each respective district must score the following number of points, out of a possible 1600, to participate in the premium money:

First District—Douglas and Lancaster counties must score not less than 1200 points.

Second District—Counties with the year 1900 population over 13,000 must score not less than 1,000 points.

Third District—Counties with the year 1900 population over 8,000 and under 13,000 must score not less than 800 points.

Fourth District—Counties with the year 1900 population under 8,000 must score not less than 700 points.

That in each class or district a premium of \$200.00 be given to first and \$125.00 to second; that all other exhibits scoring above the required number be entitled to \$100.00.

That further, a sweepstakes of \$100.00 to first, \$50.00 to second, \$30.00 to third, and \$20.00 to fourth be awarded without regard to classification.

I further recommend that this Board pay actual railroad fare for two persons with each county collective exhibit entitled to premiums.

#### HORTICULTURAL.

From all state fair exhibits that I have seen elsewhere, I can truly say that the Horticultural department at the Nebraska state fair sets the pace. I am no longer surprised that each time Nebraska exhibits at

World's or International fairs that the gold medals move Nebraskaward. The last state fair exhibit was fully up to the same high standard, and was deeply appreciated along with the improvements to the accommodations of the building.

#### TEXTILE, FINE ARTS, DOMESTIC SCIENCE.

It is unfortunate that our accommodations for fine arts, textiles and domestic science are so insufficient. The show in these departments is a credit to the ladies of Nebraska and is deserving of such accommodations that it will be a pleasure for exhibitors to show their handiwork.

#### EDUCATIONAL.

The growth of our educational exhibit from its small proportions of two years ago to its present dimensions, occupying one-half of Mercantile Hall, is a splendid monument to the consistent labor and energy of a live superintendent. If the growth of this department is to be further advanced it will be necessary to completely set aside some large building for its occupancy.

#### PRESS.

One of the essential factors to which our success of the past year is due is the unswerving loyalty exhibited by the Nebraska press. With scarcely a single exception, these moulders of public opinion have done more for the advancement of the Fair during the past year than ever before. Many of them have published each article sent out, with no other idea of recompense than the hope of urging some of their readers to avail themselves of an opportunity of securing a new ambition and purpose for individual excellence. Blessed indeed is the commonwealth whose newspapers are urging its citizenship on to better ideals.

#### MACHINERY.

The great machinery and implement department at our last fair was the largest gathering ever held upon Nebraska soil. One hundred and eighteen firms were allotted space, and some of these represented the product of several manufacturing concerns within the single exhibit. The needs of our ground for a large machinery hall becomes more apparent each succeeding fair. Nebraska being recognized as one of the chief agricultural states must of necessity be a desirable field for the showing of up-to-date implements and machinery. The pressing needs of others have left this department to create its own accommodations, but we hope that in the near future some means may be devised to house this attractive section of our fair in permanent buildings.

#### SPEED.

We find more extreme partisans with relation to speed, than in any other department. This should cause close consideration. We should give a great deal of thought in trying to evolve some plan whereby we could have more starters in our speed events. In the \$1,000.00 stake, 2:27

trot at the last fair were originally seventeen entries, with but three starters. Other races were similar. What can be done to better speed conditions? The following is a statement of track receipts and expenditures, exclusive of paid admissions at the gate. The number of persons who visit the fair on account of the track attractions is a matter of estimate in which we all differ, so I make no attempt to consider that part of the receipts which should be justly credited in this department when passing upon its merits as an attractive part of our annual fair.

## FINANCIAL STATEMENT.

## RECEIPTS.

Entry fees .....	\$2,399 60
Suspension collections .....	151 80
Stall rent .....	160 00
Grand stand concessions.....	460 00
Amphitheatre tickets .....	7,830 75

## EXPENDITURES.

\$11,002 15

Nebraska Speed Association.....	\$60 00
Dues American Trotting Association.....	75 00
Printing postals .....	12 15
Advertising—Iowa Turf .....	36 00
Advertising—The Horseman (Chicago).....	40 00
Advertising—Western Horseman (Indiana).....	37 50
Advertising—Horse Review .....	42 48
Exhibition with "Emma" .....	200 00
Exhibition with "Surena" .....	150 00
Exhibition with "Dr. Tom" .....	160 00
Motor cycle races .....	70 00
Baseball .....	654 30
Bert Morphy .....	200 00
Bands .....	300 00
Speed premiums .....	6,183 75
Superintendent Amphitheatre .....	22 00
Speed judges .....	45 00
Flagman .....	7 50
Superintendent Speed (Ronin).....	75 00
Clerk of speed (Dickman).....	56 00
Starter (McCreary) .....	125 00
Assistant superintendent speed (Scully).....	25 00
Ticket sellers .....	75 00
Ticket takers .....	75 00
Police at track and grand stand.....	282 50
Printing speed programs and half of blotters.....	36 25
Postage .....	30 00
Ronin, Lindell Hotel .....	2 50
Printing entries, stake races .....	6 00
Printing owners' and drivers' badges.....	3 00

Printing entry lists .....	8 90
Postage and printing .....	6 75
Box seat tickets .....	3 00
Vehicle passes .....	1 25
L. E. Brown, returned entry fees .....	50 00
D. B. Gunn, returned entry fees .....	25 00
Suspension collections .....	151 80
W. O. Woods, refund—race off.....	2 50
O. M. Tharpe, refund—race off.....	2 50
Express on speed records .....	1 20
Amphitheatre tickets .....	8 00
Postage .....	25 00
	<hr/>
	\$9,405 33
Credit balance .....	1,596 82
	<hr/>
	\$11,002 15

## TICKET SYSTEM.

After carefully studying the ticket system of other state fairs, I am convinced that we can improve on our methods, and we hope the Board of Managers will take some steps as to greatly simplify this department for 1907.

## PREMIUM REVISION COMMITTEE.

I wish to bring to the attention of this annual meeting the need of some new method relating to the appointment of the Premium Revision Committee. In order to bring this matter specifically before this body I will recommend that the President appoint the Premium Revision Committee for the year 1908 at the close of this meeting, and that the committee have an office at the fair grounds the last three days of the fair.

## LEGISLATION.

After visiting the Missouri and Illinois state fairs we found that Nebraska, although practically the third agricultural state in the Union, was well down toward the rear in its fair ground accommodations, so we determined upon bringing the matter before our Legislature, and for that purpose we forwarded to each member of the Legislature, each newspaper editor and each of our members, together with many of our former exhibitors, the following letter:

1906      NEBRASKA STATE BOARD OF AGRICULTURE.      1906

## BOARD OF MANAGERS.

Peter Youngers, President, Geneva.	C. H. Rudge, Chairman, Lincoln.
Elijah Filley, 1st Vice-Pres., Reynolds.	H. L. Cook, St. Paul.
Jos. Roberts, 2d Vice-Pres., Fremont.	G. W. Hervey, Omaha.
E. Z. Russell, Treasurer, Blair.	S. C. Bassett, Gibbon.
W. R. Mellor, Secretary, Lincoln.	Elijah Filley, Reynolds.

FAIR HELD AT LINCOLN, AUGUST 31 TO SEPTEMBER 7, 1906.

DEAR SIR:

The Nebraska State Board of Agriculture is contemplating a bill in the coming Legislature for the purpose of providing means whereby

suitable permanent buildings may be erected on the state fair grounds. These grounds are owned by the state of Nebraska and all improvements of whatever nature erected thereon by the state or management are the property of the state.

Nebraska, contrary to the general idea, has no bonded indebtedness, but its obligations are represented by general fund warrants, which are almost entirely the property of the permanent school fund, and out of the \$190,223.70 paid as interest on the total state indebtedness during the past two years ending November 30, 1906, the sum of \$188,109.47 was paid into the temporary school fund and has entirely passed out among the people of the state in the semi-annual school appropriation. Only \$2,114.23 was paid as interest outside of school funds.

The indebtedness of Nebraska on the 30th day of November, 1904, was \$2,253,401.00, and the indebtedness on November 30, 1906, was \$1,916,671.00, or a decrease in the state debt of \$336,730.00, of which \$273,961.00 was caused by the 1 mill redemption fund levy and \$62,769.00 from natural business causes. It is estimated that had the railroads paid their full amount of taxes that this amount would have been decreased by more than \$150,000 additional. The total delinquent outstanding state taxes, including railroad tax, now amounts to \$2,574,041.31.

This review of the financial interests of the state is for the purpose of helping you to arrive at a conclusion as to the desirability of providing permanent buildings and accommodations on our state fair grounds for the use of the present generation, or if it is necessary to continue to put this matter off for future generations to grapple with.

The State Board has used every excess dollar of profits in keeping the grounds and buildings in repair and erecting such small buildings as came within their limited means. Owing to the temporary nature of the buildings, the expenditure in repairs is of necessity enormous, and is increasing every year. The profits from the fair have been made at the expense of the exhibitors. The funds of the Fair Association should be used in the keeping up of repairs and making a better fair, with premiums in keeping with our position among the agricultural states.

Nebraska is the third state in the Union in agricultural and live-stock interests, Iowa and Illinois only excelling us. Shall we not endeavor to keep pace with other states less favored? What buildings have other states provided for their fair grounds?

In 1901 Minnesota built an agricultural hall for \$25,000.00, a water supply for \$12,000.00 and a part of the grand stand for \$22,000.00; in 1903 a manufacturers' building for \$30,000.00, and in 1905 a live-stock amphitheatre for \$50,000.00.

Missouri appropriated in 1899 \$10,000.00, in 1901 \$75,000.00, in 1903 \$125,000.00 and in 1905 \$145,000.00, making a total of \$355,000.00 in six years.

During the past six years Illinois has appropriated for permanent buildings the sum of \$258,000.00, with \$5,000.00 additional each year as part payment of premiums, and a bill is to be introduced this year for an exposition building to cost \$127,000.00.

In 1902 Iowa appropriated \$37,000.00 for a live-stock pavilion, and in 1904 \$47,000.00 for an agricultural building. The meeting just closed authorized the introduction of a bill for \$75,000.00 for a new steel grand-stand and \$50,000.00 for a swine barn and pavilion.

In 1903 the Nebraska legislature appropriated \$3,000.00 for a ladies' public comfort building and in 1905 \$10,000.00 for a live-stock pavilion.

These statements are made so that you may intelligently consider our request that we may have your earnest support in the effort we intend

to make—not in the securing of an appropriation,—but in the passing of a bill for a levy of one-eighth of a mill on the valuation of the state, the proceeds of which shall be used in the construction of permanent fair ground buildings and accommodations. Should such a bill become a law the moneys derived therefrom would be expended under the supervision of the Board of Public Lands and Buildings, the same as other state construction, upon the advice and suggestion of the Nebraska State Board of Agriculture.

We send you this letter with the purpose of giving our actions the widest publicity, so that the people of our state may be fully advised of our intentions. Hoping that we may have the earnest support of all persons who desire the advancement of the agricultural and live-stock interests of Nebraska, we remain,

Yours sincerely,

NEBRASKA STATE BOARD OF AGRICULTURE,  
By W. R. MELLOR, Secretary.

### CLASS "A"—HORSES.

LOT	Number of Entries	Number of Foreign Entries	Amount Premiums Offered	Amount Premiums Paid	Amount Premiums Paid Foreign Exhibitors
1 Percheron and French Draft .....	89	17	\$352.00	\$285.00	.....
2 Clydes and Shires . . .	13	.....	352.00	111.00	.....
3 Belgians .....	18	.....	352.00	111.00	.....
4 English, French, and German Coach .....	18	.....	352.00	97.00	.....
5 Grade Draft, Percheron, French Draft, Belgian, Clydesdale, and Eng- lish Shire .....	4	.....	108.00	14.00	.....
6 Registered Trotting ...	38	.....	231.00	162.00	.....
7 Ponies under 12 hands high .....	8	.....	24.00	18.00	.....
8 Driving Horses.....	23	1	48.00	48.00	.....
10 Saddle Horses.....	3	.....	29.00	.....	.....
11 Mules and Asses.....	27	.....	176.00	.....	.....
12 Discretionary .....	28	.....	.....	.....	.....
Totals.....	269	18	\$2024 00	\$846.00	.....

Per cent of foreign entries..... 7

Of premiums offered, per cent paid..... 31

Paid foreign exhibitors ..... 00

## CLASS "B"—CATTLE

LOT	Number of Entries	Number of Foreign Entries	Amount Premiums Offered	Amount Premiums Paid	Amount Premiums Paid Foreign Exhibitors
1 Shorthorns.....	235	89	\$507.00	\$507.00	\$327.00
2 Herefords.....	98	30	417.00	344.00	64.00
3 Aberdeen-Angus.....	61	36	417.00	199.00	107.00
4 Aberdeen-Angus— Special.....	16	.....	200.00	.....	.....
5 Galloways.....	35	14	417.00	210.00	103.00
6 Red Polled.....	88	18	417.00	353.00	72.00
7 Polled Durham.....	45	33	417.00	233.00	205.00
8 Dairy Breeds.....	68	.....	417.00	328.00	.....
9 Holsteins.....	103	21	417.00	377.00	124.00
10 Milch Cows.....	20	3	90.00	86.00	27.00
11 Fat Steers.....	4	.....	43.00	18.00	.....
Totals.....	773	244	\$3759.00	\$2653.00	\$1029.00

Per cent of foreign entries..... 31

Of premiums offered, per cent paid..... 71

Per cent paid foreign exhibitors..... 38

## CLASS "C"—SWINE.

LOT	Number of Entries	Number of Foreign Entries	Amount Premiums Offered	Amount Premiums Paid	Amount Premiums Paid Foreign Exhibitors
1 Poland-China.....	479	73	\$354.00	\$354.00	\$115.00
2 Berkshires.....	156	57	354.00	290.00	93.00
3 Duroc-Jersey Red.....	556	127	354.00	321.00	41.00
4 Chester Whites.....	81	.....	354.00	280.00	.....
Totals.....	1272	257	\$1416.00	\$1245.00	\$249.00

Per cent of foreign entries..... 20

Of premiums offered, per cent paid..... 87

Per cent paid foreign exhibitors..... 20



## CLASS "D"—SHEEP.

LOT	Number of Entries	Number of Foreign Entries	Amount Premiums Offered	Amount Premiums Paid	Amount Premiums Paid Foreign Exhibitors
1 Cotswolds .....			\$104.00		
2 Leicesters .....	18		104.00	\$59.00	
3 Lincolns .....			104.00		
4 Hampshires .....	21		128.00	63.00	
5 Oxfords .....	37		149.00	5 00	
6 Shropshires .....	35		129.00	103.00	
7 Southdowns .....	34		104.00	101.00	
8 Rambouillets .....	16		104.00	69.00	
9 Discretionary .....	4				
Totals .....	185		\$924.00	\$400.00	

Of premiums offered, per cent paid..... 42

## CLASS "E"—POULTRY.

LOT	Number of Entries	Number of Foreign Entries	Amount Premiums Offered	Amount Premiums Paid	Amount Premiums Paid Foreign Exhibitors
1 Chickens .....	756	257	\$780.00	\$397.07	\$167.12
2 Chickens .....	146	94	98.00	49.77	16.84
3 Turkeys .....	18	14	47.75	2.13	.99
4 Geese .....	127	30	60.00	49.00	4.25
5 Pigeons .....	50	4	60.00	7.71	.25
6 Rabbits .....	32		9.00	3.75	
7 Belgian Hares .....	24		6.00	4.50	
8 Discretionary .....	94				
Totals .....	1247	401	\$1060.75	\$513 93	\$189.45

Per cent of foreign entries..... 33

If premiums offered, per cent paid..... 47

Per cent paid foreign exhibitors..... 37

## CLASS "F"—FARM PRODUCTS.

LOT	Number of Entries	Number of Foreign Entries	Amount Premiums Offered	Amount Premiums Paid	Amount Premiums Paid Foreign Exhibitors
1 Grain .....	393	.....	\$99.00	\$97.00	.....
2 Seeds .....	134	.....	60.00	53.00	.....
3 Corn .....	228	.....	60.50	60.00	.....
4 Sheaf Grain .....	706	.....	102.00	102.00	.....
5 Stalk Display .....	108	.....	30.00	29.50	.....
6 Vegetables .....	490	.....	78.00	75.50	.....
7 Vine Products .....	153	.....	27.00	27.00	.....
8 Discretionary .....	74	.....	.....	.....	.....
Totals .....	2286	.....	\$456.00	\$444.00	.....

## CLASS "G"—TEXTILES.

LOT	Number of Entries	Number of Foreign Entries	Amount Premiums Offered	Amount Premiums Paid	Amount Premiums Paid Foreign Exhibitors
1 Household Fabrics and Quilts .....	55	.....	\$40.50	\$36.00	.....
2 Knitting—silk, wool, and cotton .....	197	.....	49.50	32.50	.....
3 Crocheting—silk, wool, and cotton .....	90	.....	42.50	38.20	.....
4 Sewing and Hand Work .....	80	.....	51.50	49.50	.....
5 Drawn Work .....	97	.....	38.00	30.00	.....
6 Satin Stitch and English Eyelet Embroidery .....	45	.....	33.50	22.55	.....
7 Battenburg Lace Work .....	97	.....	40.00	40.00	.....
8 Outline Embroidery .....	36	.....	17.00	14.50	.....
9 Kensington Embroidery .....	130	.....	30.50	27.50	.....
10 Mount Mellick Embroidery .....	28	.....	18.00	12.00	.....
11 Hardanger and Cut Work .....	41	.....	26.00	20.00	.....
12 Embroidery of any material not otherwise specified .....	83	.....	38.00	24.00	.....
13 Lace Work .....	76	.....	42.50	40.50	.....
14 Tatting and Netted Lace Work .....	41	.....	24.00	21.00	.....
15 Old Ladies' Dep't. ....	82	.....	80.00	58.50	.....
16 Girls' Dep't. ....	81	.....	29.50	28.50	.....
17 Bulgarian Work .....	6	.....	11.00	8.00	.....
18 Discretionary .....	72	.....	.....	.....	.....
Totals .....	1337	.....	\$612.00	\$503.25	.....

Of premiums offered, per cent paid..... 83

## CLASS "H"—FINE ARTS.

LOT	Number of Entries	Amount Premiums Offered	Amount Premiums Paid
1 Oil Paintings.....	74	\$184.25	\$80.00
2 Oil Paintings.....	69	82.75	21.50
3 Juvenile List.....	98	12.75	7.75
4 China Painting.....	130	133.25	82.87
5 China Painting.....	137	71.20	42.51
6 Photography.....	13	10.80	4.80
7 Wood Carving.....	14	45.75	19.25
8 Raffia and Willow Work	25	13.50	11.75
9 Bead work.....	25	22.50	10.50
10 Discretionary.....	45	.....	.....
Totals.....	630	\$576.75	\$280.93

Of premiums offered, per cent paid..... 48

## CLASS "I"—DAIRY, BREAD AND CAKE.

LOT	Number of Entries	Amount Premiums Offered	Amount Premiums Paid
1 Creamery Butter.....	1	\$93.00	\$40.00
2 Farm Butter.....	5	73.00	2.50
3 Ornamental Butter....	.....	20.00	.....
4 Grand Sweepstakes.....	.....	.....	.....
5 Factory Cheese.....	14	20.00	5.00
6 Farm and Dairy Cheese	2	15.00	7.00
7 Grand Sweepstakes.....	1	.....	.....
8 Bread and Cakes..	190	60.00	55.00
9 Canned Fruits.....	159	22.50	21.00
10 Preserved Fruits.....	152	28.50	28.25
11 Jellies.....	194	15.00	15.00
12 Discretionary.....	19	.....	.....
Totals.....	737	\$347.00	\$173.75

Of premiums offered, per cent paid..... 50

## CLASS "J"—EDUCATIONAL.

LOT	Number of Entries	Amount Premiums Offered	Amount Premiums Paid
1 School Buildings and Grounds . . . . .	21	\$140.00	\$140.00
2 Product Maps . . . . .	2	12.00	4.00
3 Relief Maps . . . . .	19	20.00	16.00
4 Manual Training . . . . .	15	21.00	18.00
5 Home or School Garden- ing . . . . .	10	24.00	10.00
6 School Gardens . . . . .	9	45.00	13.00
7 Bread, Cake, etc. . . . .	16	27.00	13.00
8 Canned Fruits . . . . .	16	24.00	12.00
9 Jellies . . . . .	10	12.00	10.00
10 Sewing and Hand Work..	7	15.00	7.00
11 Collective . . . . .	2	.....	.....
12 Maps . . . . .	20	.....	.....
13 Penmanship . . . . .	7	.....	.....
14 Class Work . . . . .	7	.....	.....
16 Free-hand Drawing . . . .	54	.....	.....
17 Pen Drawing . . . . .	7	7.00	7.00
18 Water Colors . . . . .	36	6.00	5.00
19 Clay Modeling . . . . .	1	6.00	5.00
20 Collection Seeds . . . . .	5	.....	.....
21 General Collective . . . .	47	50.00	50.00
22 Miscellaneous . . . . .	13	.....	.....
23 Discretionary . . . . .	36	.....	.....
Totals . . . . .	360	\$409.00	\$310.00

Of premiums offered, per cent paid..... 75

## CLASS "K"—BEES AND HONEY.

LOT	Number of Entries	Amount Premiums Offered	Amount Premiums Paid
1 . . . . .	52	\$124.00	\$124.00
2 . . . . .	.....	13.00	.....
Totals . . . . .	52	\$137.00	\$124.00

Of premiums offered, per cent paid..... 90

## CLASS "O"—COUNTY COLLECTIVE.

LOT	Number of Entries	Amount Premiums Offered	Amount Premiums Paid
1 County Collective Exhibits	24	\$2000.00	\$2773.10
Totals .....	24	\$2000.00	\$2773.10

Of premiums offered, per cent paid.....1.386

## CLASS "S"—SPEED.

LOT	Number of Entries	Amount Premiums Offered	Amount Premiums Paid	Number Foreign Entries	Paid Foreign Exhibitors
1 Harness races .....	101	(Originally) \$10000.00	\$5440.00	58	\$2857.50
2 Running races .....	34	500.00	743.75	.....	.....
Totals .....	135	\$10500.00	\$6183.75	58	\$2857.50

Per cent of foreign entries..... 42

Of premiums offered, per cent paid..... 58

Per cent paid foreign exhibitors..... 46

The amount of premiums offered have been subject to change on account of several races being cut out.

## FINANCIAL STATEMENT.

## RECEIPTS.

Cash on hand January 17, 1906.....	\$11,079 03
Received, account of miscellaneous .....	\$3,409 83
Received, account of concessions .....	6,516 50
Received, account of speed .....	2,711 40
Received, account of cattle stalls .....	460 10
Received, account of horse stalls .....	294 00
Received, account of sheep pens.....	27 00
Received, account of swine pens .....	551 00
Received, account of dray licenses .....	126 50
Received, account of special premiums, Shorthorns..	450 00
Received, account of ticket account .....	53,318 00
Received, account of camp permits .....	6 00
	<hr/> 67,870 33
Total cash .....	\$78,949 36

## EXPENDITURES.

Paid premiums .....	\$17,090 16
Paid State Horticultural Society.....	800 00
Paid Attractions—	
Motor cycle races.....	70 00
Baseball, Lincoln teams.....	500 00
Baseball, Harvard teams.....	75 00
Baseball, Fremont teams.....	75 00
“Surena”, exhibitions .....	180 00
“Surena”, guideless wonder race.....	150 00
“Emma”, guideless wonder race.....	200 00
Bert Morphy, singing.....	200 00
Band .....	500 00
Paid hotel bills, members of Board of Managers and guests.....	224 50
Paid freight, telegraph, express and drayage.....	96 10
Paid salaries of officers.....	4,280 00
Paid printing and postage.....	749 50
Paid labor pay-roll.....	1,392 92
Paid superintendents, judges, clerks, etc.....	3,218 70
Paid police pay-roll.....	1,200 34
Paid garbage .....	266 00
Paid plans and specifications for buildings.....	216 75
Paid office fixtures and supplies.....	131 70
Paid permanent improvements.....	4,349 46
Paid lumber account.....	503 97
Paid educational exhibit.....	1,100 00
Paid speed assessment and association dues.....	135 00
Paid ribbon badges and printing same.....	192 85
Paid advertising fair.....	1,150 98
Paid fish exhibit.....	300 00
Paid miscellaneous .....	1,852 14
Paid expense of winter meeting.....	297 62
Paid Corn Improvers' Association.....	150 00
<hr/>	
Total expenditures .....	\$41,648 69

## SUMMARY.

## DE.

Cash on hand January 17, 1906.....	\$11,079 03
Total receipts from all sources.....	67,870 33
	<hr/>
	\$78,949 36

## CR.

Warrants issued .....	\$41,648 69
Less unpaid warrants, series of 1906.....	105 45
	<hr/>
	\$41,543 24
Balance on hand.....	37,406 12
	<hr/>
	\$78,949 36

Total number of entries.....	9,328
Total amount offered in premiums.....	\$21,121 50
Total amount paid in premiums.....	\$17,090 16

Of total amount offered in premiums 81 per cent was paid.

Total amount of premiums paid in each class is as follows:

Class "A"—Horses .....	\$846 00
Class "B"—Cattle .....	2,653 00
Class "C"—Swine .....	1,245 00
Class "D"—Sheep .....	400 00
Class "E"—Poultry .....	513 93
Class "F"—Farm Products.....	444 00
Class "G"—Textiles .....	503 25
Class "H"—Fine Arts.....	280 93
Class "I"—Dairy, Bread and Cakes.....	173 75
Class "J"—Educational .....	310 00
Class "K"—Bees and Honey.....	124 00
Class "O"—County Collective.....	2,773 10
Class "S"—Speed .....	6,183 75
Class Special—Shorthorns .....	450 00
Class Special—Winter Corn Show.....	99 95
Awarded during 1905, and paid by reissue of 1906 warrants....	89 50
	<hr/>
	\$17,090 16

## STATEMENT OF WARRANTS ISSUED FOR YEAR OF 1906.

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
January					
17	C. H. Rudge.....	1	Expense, winter meet- ing .....		\$255 00
17	E. Z. Russell.....	2	Protest fee on check..		4 18
19	Mrs. Albert Watkins.....	3	Duplicate of No. 1026, series of 1905, which was lost .....	\$1 00	
20	Benton Bros. ....	4	Stationery and en- velopes .....		57 00
20	M. C. Fox.....	5	Redemption of No. 1167, series of 1905		50 00
22	Mrs. W. H. Crow.....	6	Redemption of No. 551 series of 1905.....	4 00	
24	T. T. Loomis.....	7	Premium winter corn show .....	1 75	
24	F. J. Olson.....	8	Premium winter corn show .....	5 70	
24	Joseph Hall .....	9	Premium winter corn show .....	5 50	
24	Alfred Anderson.....	10	Premium winter corn show .....	2 90	
24	A. J. Olson.....	11	Premium winter corn show .....	5 00	
24	Aye Bros. ....	12	Premium winter corn shown .....	2 90	
24	W. B. Cooper.....	13	Premium winter corn shown .....	35	
24	Frank J. Rist.....	14	Premium winter corn show .....	2 10	
24	W. C. Barnes.....	15	Premium winter corn show .....	2 00	
24	R. Hogue .....	16	Premium winter corn show .....	6 10	
24	A. V. Mathews.....	17	Premium winter corn show .....	2 90	
24	K. E. Nash.....	18	Premium winter corn show .....	1 50	
24	J. D. Haslik.....	19	Premium winter corn show .....	1 90	
24	Harry Soltz .....	20	Premium winter corn show .....	5 50	
24	C. F. Chase.....	21	Premium winter corn show .....	10 60	



Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
January					
24	F. W. Chase.....	22	Premium winter corn show .....	1 40	
24	H. M. Bushnell.....	23	Premium winter corn show .....	1 20	
24	M. E. Bushnell.....	24	Premium winter corn show .....	3 75	
24	Lee J. Ferris.....	25	Premium winter corn show .....	1 40	
24	Ray Miller .....	26	Premium winter corn show .....	4 90	
24	C. M. Schmale.....	27	Premium winter corn show .....	3 25	
24	F. R. Engel.....	28	Premium winter corn show .....	2 45	
24	J. W. Walkup.....	29	Premium winter corn show .....	1 05	
24	W. R. Mansfields.....	30	Premium winter corn show .....	1 20	
24	A. Martin.....	31	Premium winter corn show .....	3 95	
24	R. M. Wolcott.....	32	Premium winter corn show .....	2 80	
24	H. M. Ehlers.....	33	Premium winter corn show .....	2 45	
24	Charles M. Anderson....	34	Premium winter corn show .....	5 25	
24	H. A. Nichols.....	35	Premium winter corn show .....	1 90	
24	Don Forbes .....	36	Premium winter corn show .....	6 30	
February					
8	Gilbert Van Patten.....	37	Duplicate of No. 1014, series of 1905 said to be lost.....	37 00	
8	C. H. Ballinger.....	38	Duplicate of No. 516, returned .....	20 00	
8	August Bohle .....	39	Duplicate of No. 517, returned .....	1 00	
9	S. C. Bassett.....	40	Incidentals .....		2 85
9	S. C. Bassett.....	41	Balance salary as Sec- retary .....		91 38
9	M. C. Fox.....	42	Salary, January.....		56 71
9	W. R. Mellor.....	43	Salary, January.....		75 27
9	W. R. Mellor.....	44	Postage .....		2 00

# REPORT OF ANNUAL MEETING.

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Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
<b>February</b>					
9	Chas. Scully .....	45	Salary, January.....		16 66
9	A. T. Peters.....	46	Expense, winter meet- ing .....		30 00
9	Nellie Atherton .....	47	Premium No. 1077, unpaid for 1905....	1 00	
9	Lincoln Transfer Co.....	48	Drayage .....		2 00
9	Rudge & Guenzel Co.....	49	Furniture for Sec'y's office .....		35 45
9	Nebr. Telephone Co.....	50	Long Distance—Fair, 1905 .....		1 40
9	Benton Bros. ....	51	Printing and postage		7 60
9	I. N. Brown.....	52	Delegate, Nuckolls Co.		6 00
9	Harry Porter .....	53	Stationery .....		16 45
9	Adams Express Co.....	54	December bill.....		7 91
9	W. G. Stamm.....	55	Gas fixtures for office.		2 50
9	Will H. Green.....	56	Mdse. for educational exhibit, 1905.....		6 75
9	American Express Co....	57	Express .....		7 45
9	Globe Delivery Co.....	58	Freight and drayage..		1 50
9	C. H. Rudge.....	59	R. R. fare to Omaha.		3 30
9	George Wilhelm .....	60	Heating room for win- ter meeting .....		2 00
9	Wm. L. Campbell.....	61	Estimate speed barn..	1,000 00	
9	E. A. Brown.....	62	Printing and postal cards .....		6 00
20	Maggie Roundtree .....	63	Duplicate of No. 781, series of 1905, lost..	3 00	
25	Mrs. J. Leslie Kizer.....	64	Duplicate of No. 748, series of 1905, lost..	1 50	
23	Mrs. Wm. Walworth.....	65	Duplicate of No. 1033, series of 1905, lost..	1 00	
<b>March</b>					
5	M. C. Fox.....	66	Salary for February..		65 00
7	Mrs. Lillie Williams.....	67	Reissue of No. 1055, series of 1905.....	4 00	
7	Benton Bros. ....	68	Printing and cuts....		48 00
7	W. R. Mellor.....	69	Salary for February..		166 65
20	W. A. Irvin.....	70	Reissue of No. 607, series of 1905.....	6 00	
29	Lindell Hotel .....	71	Board bill .....		45 25
29	L. W. Leonard.....	72	R. R. fare attending meeting .....		4 62
29	W. R. Mellor.....	73	Postage .....		66 92
29	Benton Bros. ....	74	Printing .....		22 25

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
March					
29	Harry Porter .....	75	Mdse. and stationery..		4 45
29	Nebr. Speed Ass'n.....	76	Assessment of 1906..		60 00
29	Globe Delivery Co.....	77	Drayage .....		1 50
29	R. M. Phillips.....	78	Cinders for walks....		150 00
29	J. W. Burleigh.....	79	Printing .....		6 00
29	Chas. Scully .....	80	Salary for February and March .....		33 33
29	M. C. Fox.....	81	Salary for March.....		65 00
29	W. R. Mellor.....	82	Salary for March.....		166 65
29	W. L. Campbell.....	83	Part estimate, speed barn .....		330 00
April					
3	Brown & McLaughlin....	84	Bonds, Sec. and Treas.		15 00
May					
1	Lincoln Telephone Co...	85	Telephone .....		18 00
1	Chas. Scully .....	86	April salary, well and and pump hd.....		59 40
1	Geo. Anthes .....	87	10,000 premium lists..		50 00
1	E. C. Bishop.....	88	Pt. payment educa- tional exhibit.....		100 00
1	F. A. Dobson.....	89	Surveying implement grounds .....		12 50
1	Woodruff-Collins Ptg. Co.	90	Premium lists and circulars .....		23 25
1	Harry Porter .....	91	Paste, stamp moistnr.		75
1	M. C. Fox.....	92	Salary for April.....		65 00
1	W. R. Mellor.....	93	Salary for April.....		166 65
1	W. R. Mellor.....	94	Postage for April and telegrams .....		52 90
15	Leighton Batten.....	95	Reissue No. 505, series of 1905 lost.....	50	
June					
1	Mrs. A. E. Perkins.....	96	Reissue of No. 873, series of 1905, lost..	2 00	
7	M. C. Fox.....	97	Salary for May.....		65 00
7	W. L. Campbell.....	98	Balance on speed barn		339 00
7	Chas. Scully .....	99	Salary for May.....		16 66
7	James H. Tyler & Son...	100	Architectural work...		216 75
7	W. R. Mellor.....	101	Salary for May.....		166 65
7	The Horse Review Co...	102	Advertising .....		21 24
7	Jacob North & Co.....	103	Printing postals .....		2 15
7	Baker Bros. ....	104	Half-tones, etchings...		57 65
7	Iowa Turf Pub. Co.....	105	Advertising .....		36 00
7	Chicago Horseman .....	106	Advertising .....		40 00

## REPORT OF ANNUAL MEETING.

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Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
<b>June</b>					
7	W. R. Mellor.....	107	Postage .....		20 00
7	Western Horseman Co...	108	Advertising .....		37 50
8	S. A. Marting.....	109	Return fee for "Lad- die Dale" .....		10 00
8	Joe McLaughlin .....	110	Return fee for "Lena L. U." .....		10 00
8	S. H. Neuman.....	111	Return fee for "Oak- ley D".....		10 00
13	R. M. Phillips.....	111b	100 loads of cinders..		150 00
<b>July</b>					
2	Estate of Minnie Cole...	112	Reissue of warrant No. 466, series of 1905..		7 50
11	Jacob North & Co.....	113	Printing .....		13 65
11	H. Hollenbeck.....	114	Contract, swine barn..		500 00
11	W. R. Mellor.....	114b	Salary for June.....		166 65
11	M. C. Fox.....	115	Salary for June.....		65 00
11	W. R. Mellor.....	116	Postage, expense and delivery .....		32 70
11	The Horse Review.....	117	Balance due on ad- vertising .....		21 24
11	American Trotting Ass'n.	118	Dues for 1906.....		75 00
11	International Harv. Co...	119	Repairs for mower...		50
11	Benton Bros. ....	120	Printing and postage		12 25
11	R. M. Phillips.....	121	Cinders for walks....		106 50
11	Chas. Scully .....	122	Salary and labor on walks .....		52 53
11	Western Union Tele. Co..	111b	Telegrams .....		1 46
<b>August</b>					
1	Benton Bros. ....	123a	Printing and postage		16 75
1	Adams Express Co.....	124	Express .....		6 88
1	W. R. Mellor.....	125	Postage, livery, etc...		20 70
1	Palmer Advertising Co..	126	Advertising .....		262 00
1	American Express Co....	127	Express .....		2 45
1	W. L. Campbell.....	128	Feed boxes, etc.....		27 15
1	Chas. Scully .....	129	Salary for July.....		16 66
1	M. C. Fox.....	130	Salary for July.....		65 00
1	W. R. Mellor.....	131	Salary for July.....		166 65
1	Pacific Express Co.....	132	Express .....		2 20
1	S. M. Melick.....	133	Livery .....		9 50
1	Jacob North & Co.....	134	Entry books.....		46 50
1	Rudge & Guenzel Co....	134a	Grass Seed .....		1 05
1	H. Hollenbeck.....	135	Part contract, swine barns .....		1,000 00

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
August					
15	H. Hollenbeck.....	136	Bal. swine barn and rep. hog barns.....		432 85
15	Enterprise Planing Mill..	137	Shavings .....		16 50
15	W. R. Mellor.....	138	Postage and mdse....		16 08
15	Chas. Scully .....	139	Rolling and work on cinder walks .....		8 75
15	W. J. Hather.....	140	Ref. entry money, Class "C" .....		12 00
15	Cornell Engraving Co....	141	Electrotypes .....		8 48
15	Western Advertising Co..	142	Banners .....		78 00
15	International Harv. Co..	143a	Repairs .....		17 74
15	A. G. Wilson.....	143b	Pay roll to Saturday 18th .....		96 75
15	L. E. Brown.....	144	Refund two-year-old pace, off. ....		12 50
25	A. G. Wilson.....	145	Labor account.....		275 00
September					
1	A. G. Wilson.....	146	Pay roll .....		248 00
3	R. M. Phillips.....	147	Cinders .....		55 50
3	Benton Bros. ....	148	Printing, ribbons and postage .....		216 60
3	Mufvihill Posting Co....	149	Bill posting .....		13 00
3	W. R. Mellor.....	150	Postage .....		6 00
3	Lincoln Paint & Color Co.	151	Paint .....		20 59
3	Nebraska Tele. Co.....	152	Telephone .....		6 00
4	Louis Flescher .....	153	Motor cycle races....		70 00
4	F. A. Switzer.....	154	Baseball, Lincoln team		250 00
4	C. T. Graves.....	155	Judge dairy breeds...		25 00
5	F. A. Switzer.....	156	Game of baseball....		250 00
5	Buck Bros. ....	157	Part premiums.....	150 00	
5	W. S. Russell.....	158	Judging Class "E"....		50 00
5	N. H. Gentry.....	159	Judging Class "C"....		40 00
5	Clate McKinney.....	160	Exhibitions with "Em- ma" .....		200 00
5	Miss Iva Atkins.....	161	Clerk to Secretary....		22 50
6	O. S. West.....	162	Judge Class "C".....		40 00
6	Charles Perry, Mgr.....	163	Baseball game (Har- vard) .....		75 00
6	J. H. Shea, Mgr.....	164	Baseball game (Fre- mont) .....		75 00
6	L. D. Stillson.....	165	Judging bees and honey .....		2 00
6	Loomis Ticket & Env. Co.	166	Tickets and reels....		75 50
6	John Huston .....	167	Judge Class "A".....		80 80

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
6	E. M. Searle, Jr.....	168	Part payt. pay-roll....		50 00
6	L. K. McGaw.....	169	Judge Class "F".....		11 55
6	Western Supply Co.....	170	Mdse. and supplies...		50 53
6	J. P. Thomas.....	171	Moving band stand...		20 00
7	John Westover .....	172	One water key.....		2 00
6	F. F. Priest.....	173	Whitewashing .....		28 00
6	E. B. Trough.....	174	Clerk to Supt. Cattle..		12 85
6	Rudge & Guenzel Co....	175	Mdse .....		48 23
6	H. Hollenbeck.....	176	Labor and permanent improvements .....		331 16
6	Nebraska Paper Bag Co..	177	Paper .....		1 45
6	H. F. McIntosh.....	178	Judge Class "F".....		11 78
6	Dr. J. H. Gain & J. S. Anderson .....	179	Judge standard bred classes .....		5 00
6	Miss Lena Russell.....	180	Clerk to Secretary...		26 60
	Void .....	181			
6	L. Morse .....	182	Supt. Class "F".....		38 50
6	E. C. Kennedy.....	183	Exhibition race, Guide- less Wonder.....		150 00
6	F. W. Retzleff.....	184	Switching .....		2 00
6	C. J. Tracy.....	185	Police pay-roll.....		400 00
6	Margaret Covey .....	186	Clerk to Secretary....		27 00
7	Mrs. W. J. Nash.....	187	Judge Class "I" Lots 8-14 .....		13 65
7	E. Z. Russell.....	188	Pay-roll .....		364 35
7	Mrs. Clara Mansfield....	189	Assistant Class "G"...		6 00
7	Mrs. A. Hayden Meyer...	190	Judge Class "G".....		15 00
7	Mrs. Ross Curtice.....	191	Asst. Supt. "G".....		16 00
7	A. T. Davis.....	192	Helper Class "G".....		16 00
7	Mrs. C. F. Ladd.....	193	Supt. Class "G".....		30 00
7	Lee Arnett.....	194	Culverts .....		96 20
7	W. W. Cole.....	195	Salary and incidentals		53 90
7	I. W. Haws.....	196	Supt. Class "M" and postage .....		53 55
7	J. H. Ballard.....	197	R. R. fare.....		4 30
7	Lockett & Palmer.....	198	Exhibitors' tickets...		25 10
7	Chas. Mann.....	199	Supt. Forage and Transportation .....		37 55
7	W. H. Baldwin.....	200	R. R. fare.....		15 20
3	H. Woods .....	201	Speed .....	\$100 00	
4	W. J. Conly.....	202	Speed .....	100 00	
4	C. W. Kenyon.....	203	Speed .....	112 50	
4	F. P. Hamilton.....	204	Speed .....	100 00	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
4	Scot Wall .....	205	Speed .....	50 00	
4	J. D. Sprague.....	206	Speed .....	225 00	
5	W. O. Southwick.....	207	Speed .....	12 50	
5	N. J. Ronin.....	208	Speed .....	450 00	
5	L. E. Brown.....	209	Speed .....	100 00	
6	L. D. Himstreet.....	210	Speed .....	25 00	
6	L. D. Himstreet.....	211	Speed .....	25 00	
6	M. Kelley .....	212	Speed .....	7 50	
6	W. L. Cramer.....	213	Speed .....	275 00	
6	W. H. Cissna.....	214	Speed .....	50 00	
6	Geo. T. Farish.....	215	Speed .....	12 50	
6	Geo. T. Farish.....	216	Speed .....	187 50	
6	Simpson & McClure....	217	Speed .....	12 50	
6	Simpson & McClure....	218	Speed .....	87 50	
6	J. McLaughlin .....	219	Speed .....	225 00	
6	Ed. Miller .....	220	Speed .....	37 50	
6	Ed. Miller.....	221	Speed .....	12 50	
6	John Povey .....	222	Speed .....	450 00	
5	C. D. Bell.....	223	Speed .....	200 00	
6	Geo. T. Farish.....	224	Speed .....	25 00	
6	B. R. Latta.....	225	Speed .....	100 00	
6	W. B. McCormick.....	226	Speed .....	325 00	
6	W. B. McCormick.....	227	Speed .....	50 00	
6	F. J. Beardmore.....	228	Speed .....	300 00	
6	F. J. Beardmore.....	229	Speed .....	25 00	
6	L. M. Sage.....	230	Speed .....	141 25	
7	R. D. Conry.....	231	Speed .....	200 00	
7	L. P. Southworth.....	232	Speed .....	225 00	
7	L. P. Southworth.....	233	Speed .....	25 00	
7	O. Hall .....	234	Speed .....	90 00	
7	M. Weston .....	235	Speed .....	22 50	
7	W. L. Cameron.....	236	Speed .....	20 00	
7	L. E. Root.....	237	Speed .....	41 25	
7	Mendenhall & Baker....	238	Speed .....	225 00	
7	C. Pickerel .....	239	Speed .....	37 50	
7	A. J. West.....	240	Speed .....	100 00	
7	W. J. Conley.....	241	Speed .....	50 00	
7	L. H. North.....	242	Speed .....	50 00	
7	Geo. C. Anderson.....	243	Speed .....	667 00	
7	Geo. C. Anderson.....	244	Speed .....	58 00	
7	A. Meese .....	245	Speed .....	20 00	
7	A. Meese .....	246	Speed .....	50 00	
7	H. D. Bennett.....	247	Speed .....	60 00	
7	W. H. Plourd.....	248	Speed .....	15 00	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
<b>September</b>					
7	W. L. Cameron.....	249	Speed .....	50 00	
7	L. D. Himstreet.....	250	Speed .....	60 00	
7	J. Slavin .....	251	Speed .....	60 00	
7	L. P. Southworth.....	252	Speed .....	60 00	
7	Chas. Scully .....	253	Speed .....	60 00	
7	O. Hall .....	254	Speed .....	41 25	
7	M. Kelley.....	255	Speed .....	15 00	
7	C. Pickerel .....	256	Speed .....	7 50	
7	W. R. Mellor.....	257	Expense, baseball ....		\$4 30
7	Void .....	258			
12	L. E. Brown.....	259	Speed .....	50 00	
12	D. B. Gunn.....	260	Ret. entry fee, Count De Kayville .....		25 00
12	W. H. Knight, Sec'y....	261	Suspension collection		151 80
12	W. O. Woods.....	262	Refund, excess on en- tries .....		2 50
12	O. M. Tharp.....	263	Refund entr. in 2:35 pace .....		15 00
12	F. N. Du Cray.....	264	Figure sign .....		2 50
12	W. R. Mellor.....	265	Expense of concession help .....		167 50
12	Kostka Glass & Paint Co.	226	Glazing, paints, etc...		12 85
12	W. E. Bullock.....	267	Labor with team.....		15 00
12	Ralph B. Hendershot....	268	Car fare .....		2 40
12	O. P. Hendershot.....	269	Telegrams, etc. ....		10 48
12	Harry Porter .....	270	Supplies .....		11 65
12	Rudge & Guenzel.....	271	Toilet paper .....		9 00
12	Beatrice Creamery Co....	272	Bunting, etc. ....		7 71
12	Adams Express Co.....	273	Express .....		4 64
12	American Express Co...	274	Express .....		5 55
12	John Oberlies & Son....	275	Lumber .....		5 13
12	Enterprise Planing Mill.	276	Shavings .....		10 00
12	Benton Bros. ....	277	Printing .....		40 50
12	C., B. & Q. R. R. Co....	278	Switching .....		24 00
12	Joseph Roberts .....	279	2d V.-Pres't and help to Board .....		25 00
12	Melick Stables.....	280	Livery .....		38 50
12	Andrew Avery .....	281	Water Comr. represen- tative .....		21 00
12	J. Schamp Impt. Co....	282	Scraper .....		5 00
12	Void .....	283			
18	H. C. Dawson & Sons....	284	Premiums .....	35 00	
18	O. N. Remington.....	285	Premiums .....	6 00	
18	Young & Duncan.....	286	Premiums .....	11 00	



Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
18	H. W. Seefus.....	287	Premiums .....	7 00	
18	E. E. Matticks.....	288	Premiums .....	6 00	
18	Henry C. Luckey.....	289	Premiums .....	2 00	
18	John C. Meese.....	290	Premiums .....	40 00	
18	Segrist & Stout.....	291	Premiums .....	11 00	
18	Chas. A. Lewis.....	292	Premiums .....	22 00	
18	Smith & Riesheik.....	293	Premiums .....	6 00	
18	Spelts Bros. Knight Co..	294	Premiums .....	3 00	
18	J. H. Hamilton & Sons...	295	Premiums .....	4 00	
18	E. F. Jackson.....	296	Premiums .....	2 00	
18	Jos. Schmidt & Son.....	297	Premiums .....	7 00	
18	D. C. Lonergan.....	298	Premiums .....	5 00	
18	Jas. F. Menchan.....	299	Premiums .....	7 00	
18	W. L. McNutt.....	300	Premiums .....	3 00	
6	Mousel Bros. ....	301	Premiums .....	58 00	
6	Thos. Andrews .....	302	Premiums .....	61 50	
7	Adolph Arp .....	303	Premiums .....	37 50	
	Void .....	304			
7	Geo. H. White.....	305	Premiums .....	4 00	
7	W. N. Rogers.....	306	Premiums .....	55 00	
7	G. E. Clark.....	307	Premiums .....	44 00	
7	Frank Davis .....	308	Premiums .....	32 50	
	Void .....	309			
7	E. M. Metzger.....	310	Premiums .....	32 50	
7	Geo. H. White.....	311	Premiums .....	16 00	
7	T. K. Tomson.....	312	Premiums .....	100 00	
7	Geo. Kitchen, Jr.....	312	Premiums .....	60 25	
7	C. J. Tracy.....	314	Police pay-roll .....		\$400 00
7	Wm. Smiley .....	315	Premiums .....	53 00	
7	C. F. Stone.....	316	Premiums .....	75 50	
	Void .....	317			
	Void .....	318			
7	Robert Taylor .....	319	Premiums .....	90 50	
7	G. F. Hart.....	320	Premiums .....	32 00	
7	Paul Colson.....	321	Premiums .....	16 00	
7	G. A. Bailey.....	322	Premiums .....	9 00	
7	J. E. Campbell.....	323	Premiums .....	77 62	
7	C. C. Wright.....	324	Premiums .....	64 12	
7	W. Clark .....	325	Premiums .....	46 37	
8	Wm. James .....	326	Premiums .....	250 36	
8	J. H. Ballard.....	327	Premiums .....	217 11	
8	W. H. Arnold.....	328	Premiums .....	161 71	
8	R. W. Waite.....	329	Premiums .....	195 12	
8	O. P. Dovel.....	330	Premiums .....	181 73	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
8	V. Arnold.....	331	Premiums .....	161	90
8	M. B. Atkins.....	332	Premiums .....	159	36
8	W. K. Mitchell.....	333	Premiums .....	159	36
8	Z. T. Leftwich.....	334	Premiums .....	171	68
8	Arnold Martin .....	335	Premiums .....	177	28
8	L. Pelseger.....	336	Premiums .....	162	40
8	C. W. Potter.....	337	Premiums .....	96	87
	Void .....	338			
	Void .....	339			
	Void .....	340			
	Void .....	341			
8	C. B. Van Kirk.....	342	Premiums .....	70	75
8	J. C. Riggler.....	343	Premiums .....	69	50
8	E. J. Wilcox.....	344	Premiums .....	66	12
8	C. H. Beaumont.....	345	Premiums .....	62	50
8	C. E. Laverack.....	346	Premiums .....	62	25
8	H. H. Smelser.....	347	Premiums .....	55	87
8	W. Z. Taylor.....	348	Premiums .....	50	00
8	W. S. Waters.....	349	Premiums .....	42	12
10	E. McLernon .....	350	Premiums .....	11	00
	Void .....	351			
	Void .....	352			
	Void .....	353			
	Void .....	354			
10	Christian & Lang.....	355	Premiums .....	17	00
10	Void .....	356			
10	G. W. Lindsey.....	357	Premiums .....	117	50
	Void .....	358			
	Void .....	359			
10	Geo. Kitchen, Jr.....	360	Premiums .....	16	75
10	Paul M. Culver.....	361	Premiums .....	10	00
10	G. E. Clark.....	362	Premiums .....	56	00
10	Chas. Graff.....	363	Premiums .....	47	00
10	H. L. McKelvie.....	364	Premiums .....	8	00
10	E. A. Richards.....	365	Premiums .....	8	00
10	S. McKelvie.....	366	Premiums .....	11	00
10	Watson, Woods Bros. Co.	367	Premiums .....	61	00
	Void .....	368			
10	Rhea Bros. ....	369	Premiums .....	116	00
10	Lincoln Imptg. Horse Co.	370	Premiums .....	91	00
10	J. N. Harrison.....	371	Premiums .....	36	50
10	Alex Calder.....	372	Premiums .....	43	90
10	Wm. Ernst & Son.....	373	Premiums .....	30	00
10	Geo. W. Schwab.....	374	Premiums .....	5	00

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
13	W. E. Wells.....	375	Premiums .....	10 00	
13	John Neylor .....	376	Premiums .....	26 00	
13	L. C. Kennedy.....	377	Premiums .....	36 50	
13	Peter Johnson .....	378	Premiums .....	13 00	
13	W. R. Adams.....	379	Premiums .....	32 00	
13	K. C. Miller.....	380	Premiums .....	12 00	
13	W. Chamberlain .....	381	Premiums .....	20 00	
13	S. P. Briggs.....	382	Premiums .....	3 00	
13	J. R. Quein.....	383	Premiums .....	5 00	
13	Diers Bros. Pony Farm..	384	Premiums .....	12 50	
13	Chas. Woods .....	385	Premiums .....	3 00	
13	Frank Howard .....	386	Premiums .....	26 00	
13	Chas. E. Buerstetta....	387	Premiums .....	6 00	
13	B. F. Roberts.....	388	Premiums .....	3 00	
13	John Hunt .....	389	Premiums .....	25 00	
13	E. J. Brown.....	390	Premiums .....	6 00	
13	Alvin Lund .....	391	Premiums .....	5 00	
13	J. A. Ollis, Jr.....	392	Premiums .....	4 00	
13	Smith Brown .....	393	Premiums .....	3 00	
13	Gerald Wilcox.....	394	Premiums .....	6 00	
13	Chas. Mann .....	395	Premiums .....	29 25	
14	Wilhelm Martens .....	396	Premiums .....	17 00	
14	Thomas Lockett .....	397	Premiums .....	17 00	
14	B. F. Pitman.....	398	Premiums .....	17 00	
14	Buck Bros. ....	399	Premiums .....	36 87	
14	W. H. Swartsley.....	400	Premiums .....	6 00	
7	C. B. Van Kirk.....	401	R. R. fare.....		\$8 80
7	C. M. Lewelling.....	402	Supt. Class "E".....		31 10
7	Paul J. Lewelling.....	403	Asst. Class "E".....		16 00
7	W. D. Camp.....	404	Sign painting .....		15 25
	Void .....	405			
7	Mame Hartley .....	406	Judge Class "H".....		4 50
7	Anna Rogers .....	407	Judge Class "H".....		4 50
7	J. A. Walworth.....	408	Helper Class "H"....		25 00
7	May Watkins .....	409	Asst. Supt. Class "H"		16 00
7	Mrs. F. M. Hall.....	410	Supt. Class "H".....		30 00
7	G. R. Williams.....	411	Supt. Class "I"—Dairy		25 00
7	H. Van Derbeck.....	412	Sprinkling .....		28 00
7	D. W. Evans.....	413	Labor .....		24 00
7	Omaha Bee .....	414	Advertising .....		50 00
7	West. Newspaper Union..	415	Advertising .....		40 00
	Void .....	416			
	Void, not in book.....	417			
7	Mrs. J. H. Presson.....	418	Supt. Class "I".....		25 60

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
7	L. W. Leonard.....	419	Supt. Class "C".....		69 50
7	Jas. Blain .....	420	Asst. Supt. Class "C".		27 15
7	Void .....	421			
7	Ruby Charlton .....	422	Clerk to Secretary and Class "G".....		32 50
7	I. J. Edwards.....	423	Exhibitions .....	180	00
7	E. M. Searle, Jr.....	424	Pay-roll .....	313	01
7	R. M. Wolcott.....	425	Supt. Class "D" and R. R. fare.....		33 10
7	Bert Morphy .....	426	Singing .....	200	00
7	William Foster .....	427	Pay-roll .....	143	85
7	B. B. Buffum.....	428	Asst. Supt. Class "A".	27	00
7	C. H. Rudge.....	429	Tickets redeemed....	18	95
7	I. N. Greer.....	430	Flagman .....	7	50
7	O. E. Mickey.....	431	Supt. Amphitheatre...	22	00
7	J. S. Iman.....	432	Judge of Speed.....	15	00
7	York Com'l Club Band..	433	Contract for music...	500	00
7	W. A. Apperson.....	434	Supt. Class "A".....	40	00
7	George Marvin .....	435	Judge of speed.....	15	00
7	Charles Thorpe .....	436	Judge of speed.....	15	00
7	C. C. Carlson.....	437	Two days on gates...	8	00
7	A. J. Johnson.....	438	Labor, concessions....	60	00
7	Lincoln Ice & Cold Stor- age Co.....	439	Ice .....	190	40
7	E. H. Clark.....	440	Asst. Supt. Concessions	50	00
7	Void .....	441			
7	E. A. Burnett.....	442	Judge Class "D".....	5	00
7	Mary C. Fox.....	443	August salary.....	65	00
7	W. R. Mellor.....	444	August salary .....	166	65
7	E. M. Little.....	445	Judge Class "I" and testing .....	31	00
7	Lincoln Tank Line Co...	446	Oil .....	2	00
7	Western Supply Co.....	447	Plumbing supplies....	6	30
7	W. P. McCreary.....	448	Starter .....	125	00
7	Stewart McMasters.....	449	Messenger .....	8	00
7	Ed. Whitcomb .....	450	Supt. Class "K".....	25	00
7	Fred Kinyon .....	451	Supt. Mercantile Hall	25	00
7	Mrs. Freschette .....	452	Asst. Supt. Class "I"..	16	00
7	Nichols Roofing Co.....	453	Repainting and rep. Mer. Hall roof.....	87	00
7	The Hospodar.....	454	Advertising .....	25	00
7	Lincoln Daily Star.....	455	Advertising .....	75	00
7	Svenska Journalen.....	456	Advertising .....	25	00
7	Trade Review .....	457	Advertising .....	20	00

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc
September					
7	The Journal-News.....	458	Advertising .....		150 00
7	Nebraska Independent...	459	Advertising .....		25 00
7	Omaha World-Herald....	460	Advertising .....		50 00
7	Omaha News .....	461	Advertising .....		50 00
7	Twentieth Cent. Farmer.	462	Advertising .....		35 00
7	Nebraska Farmer .....	463	Advertising .....		35 00
7	Drovers Journal-Stock-				
	man .....	464	Advertising .....		25 00
7	Wayne Cook .....	465	Messenger to Sec'y and		
			labor .....		19 40
7	S. C. Bassett.....	466	Salary Bd. of Mgrs...		200 00
7	C. J. Tracy.....	467	Salary and R. R. fare		54 25
7	C. J. Tracy.....	468	Pay-roll, police.....		375 00
7	M. H. Mead.....	469	Clerk to Bd. of Mgrs..		25 24
8	Geo. F. Dickman.....	470	Clerk to Speed Dept..		40 00
8	E. Filley .....	471	Salary Bd. of Mgrs...		200 00
8	Peter Youngers .....	472	Special police.....		34 85
8	E. C. Bishop.....	473	Bal. educational ex-		
			hibit .....	\$310 00	490 00
8	Peter Younger .....	474	Salary as President...		300 00
8	E. Z. Russell.....	475	Salary as Treasurer..		200 00
8	C. H. Rudge.....	476	Salary as Bd. of Mgrs.		200 00
8	H. L. Cook.....	477	Salary as Bd. of Mgrs.		200 00
8	G. W. Hervey.....	478	Salary as Bd. of Mgrs.		200 00
8	W. J. O'Brien.....	479	Fish exhibit.....		300 00
8	N. J. Ronin.....	480	Speed Supt, Expenses		75 00
8	E. M. Searle, Jr.....	481	Salary .....		40 00
8	A. L. Searle.....	482	Asst. Supt. Gates....		30 00
8	Searle & Chapin.....	483	Lumber .....		486 13
8	A. G. Willson.....	484	Labor .....		291 00
8	J. H. Taylor.....	485	Judge Class "O".....		10 65
8	J. D. Ream.....	486	Judge Class "O".....		14 00
8	E. E. Smith.....	487	Judge Class "O".....		9 00
8	E. G. Montgomery.....	488	Judge Class "F".....		9 00
8	Dr. A. T. Peters.....	489	Veterinary .....		40 00
8	L. F. Emerson.....	490	Salary Master of Trans-		
			portation .....		50 00
8	Wm. Foster.....	491	Gen. Supt.....		40 00
8	Gen. Culver .....	492	Hospital service.....		40 00
8	C. L. Robinson.....	493	Clerk to Secretary....		24 00
8	Don Russell .....	494	Clerk to Secretary....		36 65
8	State Horticul. Society...	495	Appropriation .....		800 00
8	C. H. Rudge.....	496	Expenses .....		2 00
8	Rudge & Guenzel.....	497	Miscellaneous bill....		350 34

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
	Void .....	498			
8	Mrs. F. P. Blake.....	499	Asst. Class "I".....		1 50
8	U. F. Stannard.....	501	Clerk to President....		3 00
8	Chas. Scully .....	500	Asst. Supt. Speed.....		25 00
8	U. F. Stannard.....	502	Clerk to President....		27 62
	Void .....	503			
8	Clara Hervey.....	504	Clerk to Sec'y, Asst...		55 00
8	Agnes Ford .....	505	Clerk to Sec'y.....		18 00
8	Mary Goodrich .....	506	Clerk to Sec'y.....		28 50
8	O. P. Hendershot.....	507	Salary as Supt.....		40 00
8	R. B. Hendershot, Jr....	508	Clerk to Supt. Class "B" .....		25 00 25 00
8	Ola Belle Hervey.....	509	Clerk to Sec'y.....		3 75
8	Loralne Searle .....	510	Labor .....		1 00
8	Chas. Scully .....	511	Salary for August....		16 66
8	W. E. Bullock.....	512	Garbage .....		224 00
8	E. B. Dunham.....	513	Feed .....		2 90
14	Ursa S. Swisher.....	514	Premiums .....	\$1 25	
	Void .....	515			
14	W. A. Whitcomb.....	516	Premiums .....	3 00	
14	J. S. Catterson.....	517	Premiums .....	6 75	
14	David Foy & Son.....	518	Premiums .....	1 00	
14	Frank Young .....	519	Premiums .....	50	
14	E. S. Jennings.....	520	Premiums .....	12 25	
14	P. A. Brehm.....	521	Premiums .....	4 50	
14	W. B. Swisher.....	522	Premiums .....	1 00	
14	Fred De Vore.....	523	Premiums .....	7 75	
14	Frank Temple .....	524	Premiums .....	6 00	
14	Mrs. A. S. Gelgerelt....	525	Premiums .....	3 50	
14	J. E. Bakins.....	526	Premiums .....	1 50	
14	Howard H. Hall.....	527	Premiums .....	1 00	
	Void .....	528			
14	Perry Strandberg.....	529	Premiums .....	5 25	
14	G. M. Freustein.....	530	Premiums .....	2 50	
14	Mrs. W. A. Kirkpatrick..	531	Premiums .....	5 25	
14	C. B. Knerr.....	532	Premiums .....	7 50	
14	Mrs. John Hensler.....	533	Premiums .....	2 25	
14	C. G. Cattle.....	534	Premiums .....	3 75	
14	P. W. Burgess.....	535	Premiums .....	50	
14	Frank Stoats.....	536	Premiums .....	1 50	
14	Wm. L. Houck.....	537	Premiums .....	14 25	
14	Mrs. S. W. Goody.....	538	Premiums .....	1 00	
14	R. H. Sawyer.....	539	Premiums .....	1 00	
14	Geo. Gross .....	540	Premiums .....	8 75	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
14	T. W. Wise.....	541	Premiums .....	3 50	
14	A. H. Smith.....	542	Premiums .....	11 75	
14	Mrs. Howard Burns.....	543	Premiums .....	3 50	
14	C. W. Brehm.....	544	Premiums .....	6 25	
14	Fred Rodman .....	545	Premiums .....	1 75	
14	Raymond Stryker .....	546	Premiums .....	16 50	
14	Agnes W. Abbott.....	547	Premiums .....	2 00	
14	A. T. Peters.....	548	Premiums .....	2 50	
14	W. A. Beachull.....	549	Premiums .....	3 50	
14	Max Towle .....	550	Premiums .....	2 25	
14	Alvin G. Cowles.....	551	Premiums .....	1 00	
14	Mousel Bros. ....	552	Premiums .....	59 00	
14	Thomas Andrews .....	553	Premiums .....	20 50	
14	Adolph P. Arp.....	554	Premiums .....	37 50	
14	Geo. H. White.....	555	Premiums .....	27 00	
14	W. N. Rogers.....	556	Premiums .....	55 00	
14	Frank Davis .....	557	Premiums .....	28 50	
14	E. M. Metzger.....	558	Premiums .....	32 50	
14	T. K. Tomson & Sons...	559	Premiums .....	43 00	
14	Wm. Smiley .....	560	Premiums .....	38 00	
14	C. F. Stone.....	561	Premiums .....	75 50	
14	G. F. Hart.....	562	Premiums .....	2 00	
14	Geo. A. Bailey.....	563	Premiums .....	8 00	
14	J. D. Ferguson.....	564	Premiums .....	10 00	
14	Shaver & Deuker.....	565	Premiums .....	83 00	
14	Hal C. Young.....	566	Premiums .....	215 00	
	Void .....	567			
14	Honeywell & Reedy.....	568	Premiums .....	59 00	
14	Hal C. Young.....	569	Premiums .....	27 00	
14	John C. Doubt.....	570	Premiums .....	91 00	
14	Alex Snedden .....	571	Premiums .....	83 00	
14	Henry C. Glissmann.....	572	Premiums .....	104 00	
14	George W. Lindsey.....	573	Premiums .....	15 00	
14	Branson Bros. ....	574	Premiums .....	21 00	
14	A. C. Shallenberger.....	575	Premiums .....	18 00	
14	Retzleff Bros. ....	576	Premiums .....	17 00	
14	J. G. Brenizer.....	577	Premiums .....	9 00	
14	T. J. Wornall & Sons....	578	Premiums .....	101 00	
14	C. A. Saunders.....	579	Premiums .....	43 00	
14	Cassius L. Laune.....	580	Premiums .....	4 00	
14	C. G. Nootz.....	581	Premiums .....	19 00	
14	John O'Kane.....	582	Premiums .....	5 00	
14	Stewart Bros. ....	583	Premiums .....	4 00	
14	J. R. Mansfield.....	584	Premiums .....	3 00	

## REPORT OF ANNUAL MEETING.

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Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
14	Chas. Behlers .....	585	Premiums .....	4 00	
	Void .....	586			
14	David W. Ohl.....	587	Premiums .....	52 00	
14	E. R. Morgan.....	588	Premiums .....	34 00	
14	A. J. Firkins.....	589	Premiums .....	33 00	
14	Clara Hervey .....	590	Extra Clerk to Sec'y..		\$21 00
14	Geo. Schwab & Sons.....	591	Premiums .....	95 00	
14	G. G. Clements.....	592	Premiums .....	16 00	
14	W. B. Hunt.....	593	Premiums .....	1 00	
14	Geo. Allen .....	594	Premiums .....	128 50	
14	Wm. Allen .....	595	Premiums .....	78 00	
14	W. J. Bowman.....	596	Premiums .....	10 00	
14	Chas. M. Hulbert.....	597	Premiums .....	19 00	
14	Dawson & Bakewell.....	598	Premiums .....	40 00	
14	McKeever & Sons.....	599	Premiums .....	6 00	
14	Harvey Johnson .....	600	Premiums .....	3 00	
18	Jno. M. Frazeur.....	601	Premiums .....	1 00	
18	J. H. Seid.....	602	Premiums .....	2 00	
18	W. T. Hammond.....	603	Premiums .....	6 00	
18	F. A. Scherzinger.....	604	Premiums .....	34 00	
18	Weber, Apperson & Co..	605	Premiums .....	11 00	
18	Murhead & Gordon.....	606	Premiums .....	5 00	
18	Etzler & Moses.....	607	Premiums .....	99 00	
18	W. B. Holt.....	608	Premiums .....	88 00	
18	T. J. Congdon.....	609	Premiums .....	49 00	
18	Frank C. Tatro.....	610	Premiums .....	28 00	
18	John Cramer .....	611	Premiums .....	15 50	
18	J. W. Wharton.....	612	Premiums .....	7 00	
18	Gilmore Bros. ....	613	Premiums .....	15 00	
18	W. M. Gilmore & Son....	614	Premiums .....	103 00	
18	Vanderslice Bros. ....	615	Premiums .....	105 00	
18	J. Stroh .....	616	Premiums .....	11 00	
18	E. Z. Russell.....	617	Premiums .....	29 00	
18	H. B. Loudon.....	618	Premiums .....	6 00	
18	Ward Bros. ....	619	Premiums .....	7 00	
18	M. S. Moats & Son.....	620	Premiums .....	9 00	
18	W. G. Unitt.....	621	Premiums .....	2 00	
18	T. J. Current.....	622	Premiums .....	7 00	
18	E. K. Young.....	623	Premiums .....	5 00	
18	S. P. Briggs.....	624	Premiums .....	6 00	
18	Jacob Wernsmann .....	625	Premiums .....	6 00	
18	Gilbert Van Patten.....	626	Premiums .....	70 00	
18	J. E. Rowe.....	627	Premiums .....	17 00	
18	W. F. Waldo.....	628	Premiums .....	4 00	



Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
18	C. E. Pratt.....	629	Premiums .....	13	00
18	J. E. Mendenhall & Son..	630	Premiums .....	59	00
18	Wm. A. May.....	631	Premiums .....	6	00
18	S. W. Stewart.....	632	Premiums .....	18	00
18	F. W. Wittrock.....	633	Premiums .....	11	00
18	Le Roy Schmitz.....	634	Premiums .....	2	50
18	Mrs. M. H. Chapin.....	635	Premiums .....		50
18	S. C. Durham.....	636	Premiums .....		50
18	A. & M. C. Peters.....	637	Premiums .....	2	50
18	I. L. Lyman.....	638	Premiums .....	6	25
18	O. R. Myers.....	639	Premiums .....	6	50
	Void .....	640			
18	J. E. Fulmer.....	641	Premiums .....	3	50
18	Alva Wilson .....	642	Premiums .....	5	25
18	Geo. F. Burkett.....	643	Premiums .....	7	25
18	G. W. D. Reynolds.....	644	Premiums .....	1	25
18	Henry Witte .....	645	Premiums .....	4	00
18	J. F. Johnson.....	646	Premiums .....	1	50
18	Rex Woodring .....	647	Premiums .....	1	75
18	Mrs. Wm. Spade.....	648	Premiums .....		25
18	Seth Abbott .....	649	Premiums .....	4	75
18	Hervey Jenks .....	650	Premiums .....		25
18	C. R. Yoho.....	651	Premiums .....	1	75
18	Geo. L. Moyer.....	652	Premiums .....	1	50
18	H. H. Hendery.....	653	Premiums .....	1	25
18	Geo. W. Morse.....	654	Premiums .....		75
	Void .....	655			
18	A. Ethel Barger.....	656	Premiums .....		50
18	Mrs. J. H. Creighton.....	657	Premiums .....	9	25
18	E. E. Smith.....	658	Premiums .....	10	00
18	Mrs. A. R. Cecil.....	659	Premiums .....		88
18	Sam McClay.....	660	Premiums .....	2	25
18	Great West. Squab Co...	661	Premiums .....	2	25
18	Chester Rector .....	662	Premiums .....	4	25
18	Paul Seiffert .....	663	Premiums .....		25
18	Byron Smith .....	664	Premiums .....		38
18	Brown Squab Plant.....	665	Premiums .....		75
18	Ashley De Witt .....	666	Premiums .....	3	50
18	Walter J. Robinson.....	667	Premiums .....		50
18	Fremont Matheny .....	668	Premiums .....		50
18	Max Finnigan .....	669	Premiums .....		50
18	Ernest Bair .....	670	Premiums .....	1	50
18	James Griswold .....	671	Premiums .....		75
18	James Salleck .....	672	Premiums .....		50

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
18	Harold W. Swan.....	673	Premiums .....	1 25	
18	Trester Supply Co.....	674	Premiums .....	39 00	
18	Roy James .....	675	Premiums .....	27 00	
18	Frank G. Odell.....	676	Premiums .....	48 00	
18	Myra Warner .....	677	Premiums .....	3 00	
18	Mrs. E. Whitcomb.....	678	Premiums .....	4 00	
18	Carl A. Worth.....	679	Premiums .....	3 00	
18	Frank Wade .....	680	Premiums .....	1 00	
18	A. Atts .....	681	Premiums .....	50	
18	Chas. Buck .....	682	Premiums .....	1 50	
18	C. H. Beaumont.....	683	Premiums .....	2 00	
18	L. C. Peiseger.....	684	Premiums .....	4 50	
18	J. J. Cooper.....	685	Premiums .....	8 50	
18	Chas. Bailey.....	686	Premiums .....	1 50	
18	W. F. Fitch.....	687	Premiums .....	1 00	
18	John August .....	688	Premiums .....	5 50	
18	Dan De Jean.....	689	Premiums .....	1 00	
18	Ed. Krick .....	690	Premiums .....	50	
18	A. J. Siford.....	691	Premiums .....	8 50	
18	Wilhelm Martens .....	692	Premiums .....	3 00	
18	Abe Conklin .....	693	Premiums .....	2 00	
18	Robt. Ramsey .....	694	Premiums .....	1 50	
18	A. Kuhn .....	695	Premiums .....	1 00	
18	T. B. Turman .....	696	Premiums .....	1 50	
18	John Thorn .....	697	Premiums .....	1 00	
18	Arthur Mann .....	698	Premiums .....	1 50	
18	Jake Worky.....	699	Premiums .....	1 50	
18	W. L. Dreker.....	700	Premiums .....	2 00	
19	Chas. Graff .....	701	Premiums .....	44 00	
19	Albert Leman .....	702	Premiums .....	12 75	
19	D. R. Evans.....	703	Premiums .....	15 25	
19	S. F. Mumna.....	704	Premiums .....	50	
19	I. W. Haws.....	705	Premiums .....	3 00	
19	C. E. Laverack.....	706	Premiums .....	1 50	
19	M. Rollins .....	707	Premiums .....	1 50	
19	G. M. Murphy.....	708	Premiums .....	1 00	
19	Mrs. J. A. Campbell.....	709	Premiums .....	8 50	
19	L. B. Renner.....	710	Premiums .....	3 00	
19	Harry Smelser .....	711	Premiums .....	3 00	
19	J. W. Ingles.....	712	Premiums .....	50	
19	J. H. Davison.....	713	Premiums .....	1 50	
19	W. H. Arnold.....	714	Premiums .....	19 50	
19	Wm. Jacobs .....	715	Premiums .....	1 00	
19	C. C. Wright.....	716	Premiums .....	1 50	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
19	John Martin.....	717	Premiums .....	50	
19	D. D. Carpenter.....	718	Premiums .....	1 50	
19	Geo. Carpenter .....	719	Premiums .....	1 00	
19	Thos. Lockett .....	720	Premiums .....	6 00	
19	Ed Hayes .....	721	Premiums .....	6 75	
19	Wm. James .....	722	Premiums .....	14 50	
19	Chas. Swartz .....	723	Premiums .....	2 00	
19	G. W. Morse .....	724	Premiums .....	16 25	
19	Mads Anderson .....	725	Premiums .....	50	
19	Julius Kurp .....	726	Premiums .....	50	
19	L. C. Pelsiger.....	727	Premiums .....	1 00	
19	John Brown .....	728	Premiums .....	1 50	
19	J. Armstrong .....	729	Premiums .....	4 00	
19	Walter Carlisle .....	730	Premiums .....	4 50	
19	Z. T. Leftwick.....	731	Premiums .....	3 50	
19	Harry Schickedantz .....	732	Premiums .....	3 00	
19	G. W. Hummel.....	733	Premiums .....	3 50	
19	M. B. Atkins.....	734	Premiums .....	32 00	
19	Chas. Reuter .....	735	Premiums .....	2 00	
19	W. K. Mitchell.....	736	Premiums .....	2 50	
19	B. F. Mumna.....	737	Premiums .....	2 75	
19	Henry Meier .....	738	Premiums .....	10 00	
19	R. Hogue .....	739	Premiums .....	2 50	
19	Lee Smith .....	740	Premiums .....	7 00	
19	Clyde Arnold .....	741	Premiums .....	1 00	
19	Marion Arnold .....	742	Premiums .....	5 00	
19	Chas. Schwab .....	743	Premiums .....	2 00	
19	Vincent Arnold .....	744	Premiums .....	3 00	
19	Smith Bros. ....	745	Premiums .....	1 00	
19	S. R. Foss.....	746	Premiums .....	3 00	
19	Wm. J. Temple.....	747	Premiums .....	1 00	
19	Frank Teake .....	748	Premiums .....	1 50	
19	R. J. Scott.....	749	Premiums .....	1 50	
19	S. Belles .....	750	Premiums .....	2 50	
19	Mrs. John Thinner.....	751	Premiums .....	50	
19	H. H. Sprague.....	752	Premiums .....	50	
19	O. P. Dovel.....	753	Premiums .....	28 00	
10	M. Robbins.....	754	Premiums .....	31 25	
19	John Vincek .....	755	Premiums .....	1 50	
19	John Duffin .....	756	Premiums .....	1 50	
19	Arnold Martin .....	757	Premiums .....	38 00	
19	Chas. Mann.....	758	Premiums .....	1 00	
19	Geo. N. Toops.....	759	Premiums .....	3 00	
19	John Ward .....	760	Premiums .....	50	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
19	L. D. Clifton.....	761	Premiums .....	3 00	
19	L. Wheeler .....	762	Premiums .....	1 50	
19	John H. Ballard.....	763	Premiums .....	17 50	
19	W. K. Bender.....	764	Premiums .....	1 50	
19	C. B. Hain.....	765	Premiums .....	1 00	
19	J. W. Christman.....	766	Premiums .....	50	
19	F. A. Baldwin.....	767	Premiums .....	1 50	
19	Theo. D. Deutsch.....	768	Premiums .....	1 00	
19	C. B. Hain.....	769	Premiums .....	50	
19	Frank Scalacek .....	770	Premiums .....	1 00	
19	John Sazama .....	771	Premiums .....	1 50	
19	W. H. Baldwin.....	772	Premiums .....	4 00	
19	Sam'l Taggart .....	773	Premiums .....	1 50	
19	L. D. Clifton.....	774	Premiums .....	3 00	
19	Geo. Beeman .....	775	Premiums .....	1 50	
19	F. F. Hall.....	776	Premiums .....	50	
19	Ed. Krick .....	777	Premiums .....	1 50	
19	A. Wickenkamp .....	778	Premiums .....	1 00	
19	Mrs. James Hull.....	779	Premiums .....	2 50	
19	Jno. Pfeifer .....	780	Premiums .....	1 00	
19	Mrs. Matt Mumna.....	781	Premiums .....	50	
19	Stanley Hain .....	782	Premiums .....	1 50	
19	Sam Harding .....	783	Premiums .....	1 00	
19	Rich Pickett .....	784	Premiums .....	1 50	
19	Nathan Troufey .....	785	Premiums .....	1 00	
	Void .....	786			
19	Charles McDermott .....	787	Premiums .....	3 00	
19	Geo. Lease .....	788	Premiums .....	1 00	
19	A. L. Sovreign.....	789	Premiums .....	1 00	
19	C. R. Murphy.....	790	Premiums .....	50	
19	Miss Elsie Guergis.....	791	Premiums .....	1 50	
19	Jas. Johnson .....	792	Premiums .....	1 00	
19	John Partsch .....	793	Premiums .....	50	
19	T. M. Nichol.....	794	Premiums .....	50	
19	C. Wm. Sidles.....	794b	Premiums .....	50	
19	A. Oakley .....	795	Premiums .....	1 50	
19	Geo. Douglas.....	796	Premiums .....	1 00	
19	Mrs. Eliza Campbell.....	797	Premiums .....	1 00	
19	Seth Abbott .....	798	Premiums .....	1 00	
19	S. J. Kryder.....	799	Premiums .....	1 50	
19	Henry Smith .....	800	Premiums .....	1 50	
19	Louis Anstead .....	801	Premiums .....	50	
19	Mildred Renner .....	802	Premiums .....	1 50	
20	A. G. Wilson.....	803	Cleaning up grounds..		

88 40

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
20	Geo. Kitchen, Jr.....	804	Refund excess stall rent .....		8 00
20	T. J. Wornall.....	805	Judge Class "B".....		50 00
20	C. A. Stannard.....	806	Judge Class "B".....		50 00
20	Martin Towel Co.....	807	Towels .....		4 50
21	U. S. Express Co.....	808	Express .....		5 00
21	Mo. Pacific R. R. Co....	809	Switching .....		6 00
21	J. H. Mahan.....	810	Premiums .....	2 75	
21	Paul Thompson & Sons..	811	Premiums .....	76 00	
21	Mrs. Lillie Fearn.....	812	Premiums .....	8 00	
21	Myrl Carter .....	813	Premiums .....	3 00	
21	Mildred Naylor .....	814	Premiums .....	6 00	
21	Miss Christiane Petersen	815	Premiums .....	1 00	
21	Mrs. F. B. Kenyon.....	816	Premiums .....	5 50	
21	Mrs. F. D. Palmer.....	817	Premiums .....	14 50	
21	Mrs. C. F. Patterson....	818	Premiums .....	2 00	
21	Miss Pansy Proulx.....	819	Premiums .....	4 00	
21	Harriett Davis .....	820	Premiums .....	9 00	
21	Mrs. John L. Wright....	821	Premiums .....	1 50	
21	Marg. Hallett.....	822	Premiums .....	3 00	
21	Miss Ella Doolittle.....	823	Premiums .....	8 00	
21	Mrs. S. R. Greer.....	824	Premiums .....	5 00	
21	Helen Greusel .....	825	Premiums .....	7 00	
21	Mrs. F. J. Rehlaender...	826	Premiums .....	4 00	
21	Stella Badger .....	827	Premiums .....	2 00	
21	Josie R. Waunsey.....	828	Premiums .....	1 00	
21	Louise Millson.....	829	Premiums .....	3 00	
21	Mrs. Joe Klein.....	830	Premiums .....	4 00	
21	Mrs. H. Richards.....	831	Premiums .....	2 00	
21	Mamie A. Shaw.....	832	Premiums .....	5 50	
21	Mrs. M. B. Miller.....	833	Premiums .....	2 00	
21	Mrs. J. A. Rudd.....	834	Premiums .....	1 00	
21	Mrs. W. H. Gallup.....	835	Premiums .....	17 50	
21	Mrs. Percy B. Parker....	836	Premiums .....	1 00	
21	Mrs. E. A. Bailey.....	837	Premiums .....	6 00	
21	Mrs. Chas. Smith.....	838	Premiums .....	1 00	
21	Mrs. J. S. Leonhardt....	839	Premiums .....	3 50	
21	Carrie C. Welch.....	840	Premiums .....	4 00	
21	Mrs. A. H. Tyrer.....	841	Premiums .....	1 00	
21	Mrs. W. S. Houseworth..	842	Premiums .....	3 00	
21	Mrs. Albt. E. Perkins....	843	Premiums .....	2 00	
21	Grace Hicks.....	844	Premiums .....	2 00	
21	Ethelyn Pierce .....	845	Premiums .....	2 00	
21	Mrs. W. B. Crossley....	846	Premiums .....	2 00	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
21	Clara Brandt .....	847	Premiums .....	1 00	
21	W. A. Kellar .....	848	Premiums .....	2 00	
21	Mrs. Sam Samuels.....	849	Premiums .....	1 00	
21	Mrs. I. M. Heckler.....	850	Premiums .....	6 00	
21	Mrs. Fred Funke.....	851	Premiums .....	1 00	
21	Mrs. Annie Whiting....	852	Premiums .....	5 00	
21	Mrs. Chas. Hamilton....	853	Premiums .....	6 75	
21	Mrs. W. N. Rehlaender..	854	Premiums .....	6 00	
21	Mrs. Charity Gustin....	855	Premiums .....	2 00	
21	Mrs. H. B. Clarkson....	856	Premiums .....	1 00	
21	Sadie Sarbach .....	857	Premiums .....	8 00	
21	Mrs. Ann Randolph.....	858	Premiums .....	18 50	
21	Mrs. O. B. Macey.....	859	Premiums .....	6 00	
21	Mrs. S. E. Cook.....	860	Premiums .....	2 00	
21	Mrs. L. E. Roach.....	861	Premiums .....	2 00	
21	Lottie Sharp .....	862	Premiums .....	6 00	
21	Miss Mary Greer.....	863	Premiums .....	2 00	
21	Mrs. J. P. Riley.....	864	Premiums .....	2 00	
21	Mrs. Mary Irvine.....	865	Premiums .....	2 00	
21	Mrs. Newton Brungard..	866	Premiums .....	1 00	
21	Mrs. W. J. Robinson....	867	Premiums .....	7 00	
21	Mrs. Lewis Fales.....	868	Premiums .....	1 00	
21	Q. E. Dalton.....	869	Premiums .....	4 00	
21	Mrs. F. P. Blake.....	870	Premiums .....	2 50	
21	Mrs. Mary Cooper.....	871	Premiums .....	15 25	
21	Mrs. F. B. Heald.....	872	Premiums .....	7 00	
21	Mrs. D. A. Wentz.....	873	Premiums .....	11 00	
21	Mrs. M. S. Pool.....	874	Premiums .....	1 00	
21	Mrs. D. Daniel.....	875	Premiums .....	2 00	
21	Mrs. Ann Parks.....	876	Premiums .....	4 00	
21	Mrs. M. A. Woodson....	877	Premiums .....	7 50	
21	Mrs. Frank Auberton....	878	Premiums .....	75	
21	Almina E. Smith.....	879	Premiums .....	5 50	
21	Mrs. Mary Nodolf.....	880	Premiums .....	18 00	
21	Mrs. C. M. Peters.....	881	Premiums .....	1 00	
21	Mrs. Cynthia Neal.....	882	Premiums .....	1 50	
21	Mrs. M. L. Crowell.....	883	Premiums .....	1 00	
21	Mrs. Robert McPherson..	884	Premiums .....	7 50	
21	Mrs. Ann Jenkins.....	885	Premiums .....	3 00	
21	Mrs. E. Valentine.....	886	Premiums .....	16 75	
21	Mrs. W. J. Lamb.....	887	Premiums .....	4 00	
21	Mrs. F. E. Newton.....	888	Premiums .....	4 50	
21	Mrs. Sophie Nowan.....	889	Premiums .....	50	
21	Sarah E. Altheam.....	890	Premiums .....	2 00	

## 56 . NEBRASKA STATE BOARD OF AGRICULTURE.

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
21	Mrs. M. K. Barton.....	891	Premiums .....	2 00	
21	Blanche Kibble .....	892	Premiums .....	8 00	
21	Gladys Wiel .....	893	Premiums .....	3 50	
21	Dorothy Raymond .....	894	Premiums .....	2 00	
21	Mrs. Clara Vallis.....	895	Premiums .....	1 00	
21	Bessie Fox .....	896	Premiums .....	3 00	
21	Dorothy Watkins .....	897	Premiums .....	1 00	
21	Ruth Lahr .....	898	Premiums .....	3 00	
21	Eunice S. Chapin.....	899	Premiums .....	2 50	
21	Mary Hartley .....	900	Premiums .....	3 00	
22	Lillie McLean .....	901	Premiums .....	3 00	
22	Bernice Heckler .....	902	Premiums .....	2 00	
22	Annie Carter .....	903	Premiums .....	1 00	
22	Florence Craig .....	904	Premiums .....	50	
22	Nellie M. Youngers.....	905	Premiums .....	1 00	
22	Mrs. H. W. Caldwell....	906	Premiums .....	5 00	
22	Mrs. O. Vodeberg.....	907	Premiums .....	3 00	
22	Della S. Evans.....	908	Premiums .....	2 50	
22	Mrs. J. E. Erb.....	909	Premiums .....	3 50	
22	Mrs. J. O. Graham.....	910	Premiums .....	5 75	
22	Mrs. S. B. Weil.....	911	Premiums .....	1 00	
22	Evelyn McLeary .....	912	Premiums .....	1 00	
22	Mrs. F. E. Lahr.....	913	Premiums .....	75	
22	Della Pert .....	914	Premiums .....	1 00	
22	Mrs. F. H. Brooks.....	915	Premiums .....	2 00	
22	Mrs. J. E. Kaufman....	916	Premiums .....	50	
22	Mrs. Emma Bennett....	917	Premiums .....	3 00	
22	Mrs. Maud Duff.....	918	Premiums .....	1 50	
22	Mrs. G. R. Wilson.....	919	Premiums .....	4 50	
22	Mrs. Elisha White.....	920	Premiums .....	3 00	
22	Mrs. Lucy Cummins....	921	Premiums .....	4 00	
22	Mrs. C. R. Teft.....	922	Premiums .....	2 00	
22	Mrs. C. Sellers.....	923	Premiums .....	3 00	
22	Mrs. R. Hohman.....	924	Premiums .....	1 50	
22	Mary E. Towle.....	925	Premiums .....	14 50	
22	Mrs. H. E. Doolittle....	926	Premiums .....	1 50	
22	Mrs. A. H. Drain.....	927	Premiums .....	1 00	
22	Katie D. Smith.....	928	Premiums .....	3 00	
22	Mrs. A. F. Smith.....	929	Premiums .....	13 50	
22	Mrs. Lena Brady.....	930	Premiums .....	6 00	
22	Mrs. S. H. Payne.....	931	Premiums .....	1 50	
22	Rosa M. Ackerman.....	932	Premiums .....	2 00	
22	Mrs. Mazie Smith.....	933	Premiums .....	4 00	
22	Mrs. Chas. Kaufman....	934	Premiums .....	1 50	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
22	Margaret E. Safford.....	935	Premiums .....	50	
22	Mrs. Edwin P. Sharp....	936	Premiums .....	50	
22	Mrs. Chas. B. Gurney....	937	Premiums .....	2 00	
22	Mrs. Lizzie Scherer.....	938	Premiums .....	3 00	
22	Mrs. William Pickering..	939	Premiums .....	50	
22	Mrs. M. Elderdice.....	940	Premiums .....	1 00	
22	Mrs. C. C. Gardner.....	941	Premiums .....	1 00	
22	Nellie M. Hanna.....	942	Premiums .....	3 00	
22	Mary Rose .....	943	Premiums .....	1 00	
22	Mrs. E. T. Kibble.....	944	Premiums .....	50	
22	Miss Elma Wilman.....	945	Premiums .....	1 50	
22	Mrs. Chas. Crocker.....	946	Premiums .....	2 00	
22	Miss Eda Bischof.....	947	Premiums .....	1 00	
22	Mrs. E. Solomon.....	948	Premiums .....	8 00	
22	Mrs. Elliot J. Cheney....	949	Premiums .....	2 00	
22	Marion Arenson .....	950	Premiums .....	1 00	
22	Mrs. Maud Sterns .....	951	Premiums .....	2 00	
22	Mrs. Lillie Fike.....	952	Premiums .....	2 50	
22	Mrs. Gertrude Sterner...	953	Premiums .....	2 00	
22	Mrs. Catherine Leach....	954	Premiums .....	3 00	
22	Mrs. Lois Burress.....	955	Premiums .....	1 00	
22	Mrs. H. M. Chapin.....	956	Premiums .....	2 50	
22	Estella R. Morrison.....	957	Premiums .....	2 00	
22	Anna K Husted.....	958	Premiums .....	1 00	
22	Jeanette Palmer .....	959	Premiums .....	2 20	
22	Mrs. Etta Buffum.....	960	Premiums .....	2 00	
22	Elizabeth Dolan .....	961	Premiums .....	5 00	
22	Lena McLease .....	962	Premiums .....	13 75	
22	Creta Warner .....	963	Premiums .....	7 50	
22	Gladys Dana .....	964	Premiums .....	75	
22	Alice R. Craig.....	965	Premiums .....	7 75	
22	Louise Mundy .....	966	Premiums .....	32 00	
22	Mrs. A. G. Greenlee.....	967	Premiums .....	12 00	
22	Myra Warner .....	968	Premiums .....	11 00	
22	Florence Waugh .....	969	Premiums .....	75	
22	Venus Pool .....	970	Premiums .....	1 25	
22	Grace B. Mills.....	971	Premiums .....	1 50	
22	Helen Wilson .....	972	Premiums .....	2 50	
22	Fay E. Kester.....	973	Premiums .....	1 00	
22	Lillie Yont .....	974	Premiums .....	5 38	
22	Ann Miller .....	975	Premiums .....	1 00	
22	Mabel L. Brown.....	976	Premiums .....	50	
22	Ella K. Morrison.....	977	Premiums .....	1 25	
22	Miss Edith Kruse.....	978	Premiums .....	88	



Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
22	Martha Pierce .....	979	Premiums .....	25	
22	Mrs. H. M. Scott.....	980	Premiums .....	1 13	
22	Jessie Edinborough ....	981	Premiums .....	1 13	
22	Will Johnston .....	982	Premiums .....	38	
22	Margery Kimball .....	983	Premiums .....	50	
22	Helen Hall .....	984	Premiums .....	1 25	
22	Freda N. Stuff.....	985	Premiums .....	75	
22	Eileen Winslow .....	986	Premiums .....	1 50	
22	Hazel B. Johnston.....	987	Premiums .....	75	
22	Miss L. Lott.....	988	Premiums .....	50	
22	A. E. Beardsley.....	989	Premiums .....	25	
22	Mabel C. Truax.....	990	Premiums .....	13 00	
22	Miss True Gingery.....	991	Premiums .....	8 38	
22	Mrs. C. H. Rockwell.....	992	Premiums .....	7 00	
22	Daisy H. Compton.....	993	Premiums .....	5 00	
22	Henrietta Brock .....	994	Premiums .....	14 25	
22	Ivaloo Leonhardt .....	995	Premiums .....	4 50	
22	Clara P. Johnson.....	996	Premiums .....	2 00	
22	Mrs. E. W. Allen.....	997	Premiums .....	3 00	
22	Mrs. Susie K. Hoagland..	998	Premiums .....	1 00	
22	Lena B. Rector.....	999	Premiums .....	3 85	
22	Agnes M. Denton.....	1000	Premiums .....	3 00	
22	Gertrude Kincaid.....	1001	Premiums .....	4 00	
22	Hazel Edleman .....	1002	Premiums .....	3 00	
22	Harriet M. Pierce.....	1003	Premiums .....	3 13	
22	Mrs. S. Grainger.....	1004	Premiums .....	50	
22	Ada Kuhn .....	1005	Premiums .....	1 50	
22	Claudia V. Barnes.....	1006	Premiums .....	2 63	
22	Jewel F. Holben.....	1007	Premiums .....	2 38	
22	Henrietta Benedict .....	1008	Premiums .....	1 00	
22	Mrs. L. W. Granger.....	1009	Premiums .....	50	
22	Miss Wallace .....	1010	Premiums .....	1 00	
22	Archer King .....	1011	Premiums .....	1 80	
22	A. H. Dinsmore.....	1012	Premiums .....	2 20	
22	Mrs. Eva F. Ives.....	1013	Premiums .....	2 50	
22	Mary L. Chapin.....	1014	Premiums .....	3 00	
22	Mrs. B. J. Spencer.....	1015	Premiums .....	2 50	
22	Helen W. Brock.....	1016	Premiums .....	2 00	
22	Mrs. C. C. Dunbaugh....	1017	Premiums .....	2 25	
22	F. R. Jacobs.....	1018	Premiums .....	2 50	
22	Olga Thaderman .....	1019	Premiums .....	50	
22	Cora A. Wood.....	1020	Premiums .....	2 50	
22	Guy Jacobs .....	1021	Premiums .....	50	
22	Herman Neitzel .....	1022	Premiums .....	3 25	

## REPORT OF ANNUAL MEETING.

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Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
September					
22	Mrs. Emma Seacrest....	1023	Premiums .....	3 75	
22	Mrs. Pearl Danham.....	1024	Premiums .....	2 50	
22	Miss F. Cramphin.....	1025	Premiums .....	50	
22	Eley Hefley .....	1026	Premiums .....	1 00	
22	Elizabeth Hefley .....	1027	Premiums .....	50	
22	Mrs. Libbie Lundgren....	1028	Premiums .....	15 75	
22	Clara E. Finch.....	1029	Premiums .....	4 50	
22	Mrs. J. A. Westland.....	1030	Premiums .....	3 00	
22	Mrs. Mary Van Derbeck....	1031	Premiums .....	2 00	
	Void .....	1032			
22	Mrs. Geo. Anthes.....	1033	Premiums .....	1 50	
22	Mrs. C. F. Bowman.....	1034	Premiums .....	4 00	
22	Rose Herrick .....	1035	Premiums .....	3 00	
22	Mrs. F. M. Brigham.....	1036	Premiums .....	2 00	
22	Jeanette Batten .....	1037	Premiums .....	50	
22	Lawrence Waugh .....	1038	Premiums .....	50	
22	Mrs. Leo. L. Kurtz.....	1039	Premiums .....	1 50	
22	Jessie L. Schwake.....	1040	Premiums .....	1 50	
22	Mrs. R. Suter.....	1041	Premiums .....	50	
22	Mrs. A. E. Butler.....	1042	Premiums .....	3 00	
22	Hattie Burress .....	1043	Premiums .....	1 00	
22	Mrs. L. Roscoe.....	1044	Premiums .....	1 50	
22	Mrs. C. L. Embody.....	1045	Premiums .....	2 25	
22	Alma M. Hall.....	1046	Premiums .....	50	
22	Alta E. Hall.....	1047	Premiums .....	1 50	
22	Mrs. Clark Prindle.....	1048	Premiums .....	1 00	
22	Rose Greenamyre .....	1049	Premiums .....	3 50	
22	May Honeywell .....	1050	Premiums .....	1 00	
22	Agnes W. Abbott.....	1051	Premiums .....	3 75	
22	Olive Loughridge .....	1052	Premiums .....	50	
22	Mrs. W. A. Johnson.....	1053	Premiums .....	1 50	
22	Mrs. C. S. Troyer.....	1054	Premiums .....	1 50	
22	Mrs. D. E. Peters.....	1055	Premiums .....	1 75	
22	Mrs. B. F. Eddy.....	1056	Premiums .....	1 25	
22	Mrs. H. H. Loughridge....	1057	Premiums .....	2 00	
22	Alice Frischette.....	1058	Premiums .....	1 50	
22	Mrs. W. J. Lynch.....	1059	Premiums .....	4 50	
22	C. F. Barras.....	1060	Premiums .....	5 25	
22	Mrs. H. Phillipsen.....	1061	Premiums .....	1 75	
22	Martha Witte .....	1062	Premiums .....	1 25	
22	Mrs. Gertie Cotton.....	1063	Premiums .....	2 50	
22	Mrs. W. H. Harding.....	1064	Premiums .....	75	
22	Mrs. Jane Cotter.....	1065	Premiums .....	2 00	
22	Rosa Eddy .....	1066	Premiums .....	1 25	

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc
September					
22	Mrs. Ella Hammond.....	1067	Premiums .....	1 00	
22	Mrs. H. W. Trester.....	1068	Premiums .....	1 25	
22	Mrs. C. W. Frost.....	1069	Premiums .....	7 50	
22	Mrs. C. R. Dudley.....	1070	Premiums .....	25	
22	Mrs. Ida McRae.....	1071	Premiums .....	9 00	
22	M. L. Trester.....	1072	Premiums .....	1 00	
22	Mrs. J. P. Rucker.....	1073	Premiums .....	25	
22	Katie R. Stalter.....	1074	Premiums .....	1 25	
22	Charles Knudson .....	1075	Premiums .....	40 00	
22	Honeywell & Rudy.....	1076	Premiums .....	60 00	
22	Harbine Cheese Co.....	1077	Premiums .....	5 00	
22	Christen Wittenbach .....	1078	Premiums .....	4 00	
22	Mrs. A. E. Waters.....	1079	Premiums .....	3 00	
	Void .....	1080			
22	Mrs. E. Waters.....	1081	Sale of cheese.....		\$0 98
28	Jacob North & Co.....	1082	Printing .....		2 50
28	Nebr. Electrical Co.....	1083	Supplies .....		4 25
29	Miss M. J. Goudy.....	1084	Premiums .....	50	
29	Honeywell & Rudy.....	1085	Premiums .....	6 50	
29	Frank Iams .....	1086	Premiums .....	52 00	
29	Frank Iams .....	1087	Premiums .....	79 50	
29	Geo. P. Schwab & Sons..	1088	Premiums .....	4 00	
29	West. Union Tel. Co....	1089	Telegrams .....		12 56
October					
5	James B. Archerd.....	1090	Premiums .....	10 13	
5	Eugene P. Bryant.....	1091	Premiums .....	50	
5	Bixby & Bixby.....	1092	Premiums .....	4 88	
5	J. E. Fulmer.....	1093	Premiums .....	6 25	
6	Mary C. Fox.....	1094	Salary for September.		65 00
6	W. R. Mellor.....	1095	Salary for September.		166 65
6	Chas. Scully .....	1096	Salary for September.		16 66
6	W. R. Mellor.....	1097	Postage and boxes....		5 78
6	Globe Delivery Co.....	1098	Drayage .....		5 80
6	Benton Bros. ....	1099	Postage and printing..		29 00
6	Reimers & Frel'd.....	1100	Cement blocks.....		2 08
6	Vanderslice Bros. ....	1101	Premiums .....	6 00	
9	W. E. Bullock.....	1102	Cleaning grounds....		75 00
13	G. F. Hart.....	1103	Premiums, special....	28 00	
13	Branson Bros. ....	1104	Premiums, special ....	7 50	
13	Retzlaff Bros. ....	1105	Premiums, special....	10 00	
13	A. C. Shallenberger....	1106	Premiums, special....	27 00	
13	Thos. Andrews .....	1107	Premiums, special....	65 00	
13	C. L. Laune.....	1108	Premiums, special....	2 50	
13	J. G. Brenizer.....	1109	Premiums, special....	27 50	

## REPORT OF ANNUAL MEETING.

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Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
October					
13	John O'Kane .....	1110	Premiums, special....	4 00	
13	C. G. Nootz.....	1111	Premiums, special....	16 00	
13	Stewart Bros. ....	1112	Premiums, special....	3 00	
13	J. R. Mansfield.....	1113	Premiums, special....	2 50	
13	Chas. F. Behlers.....	1114	Premiums, special....	3 00	
13	G. A. Bailey.....	1115	Premiums, special....	1 50	
13	G. F. Hart.....	1116	Premiums, special....	17 00	
13	Branson Bros. ....	1117	Premiums, special....	6 50	
13	Retzlaff Bros. ....	1118	Premiums, special....	8 50	
13	A. C. Shallenberger....	1119	Premiums, special....	9 00	
13	Thos. Andrews .....	1120	Premiums, special....	41 00	
13	C. L. Laune.....	1121	Premiums, special....	2 00	
13	J. G. Brenizer.....	1122	Premiums, special....	4 50	
13	Jno. O. Kane.....	1123	Premiums, special....	2 50	
13	C. G. Nootz.....	1124	Premiums, special....	9 50	
13	Stewart Bros. ....	1125	Premiums, special....	2 00	
13	J. R. Mansfield.....	1126	Premiums, special....	1 50	
13	Chas. Behlers .....	1127	Premiums, special....	2 00	
13	G. A. Bailey.....	1128	Premiums, special....	50	
13	C. A. Saunders.....	1129	Premiums, special....	21 50	
13	T. K. Tomson & Sons....	1130	Premiums, special....	70 00	
13	T. J. Wornall & Sons....	1131	Premiums, special....	50 50	
13	Geo. H. White.....	1132	Premiums, special....	4 00	
13	Scotts Bluffs County....	1133	Reissue No. 966, series of 1905.....	7 50	
13	F. B. Keedle.....	1134	Premiums .....	16 50	
16	Mrs. W. J. Robinson....	1135	Premiums .....	50	
19	W. R. Mellor.....	1136	Postage .....		\$16 00
19	Neb. Telephone Co.....	1137	Telephones .....		14 30
19	Western Union Tele....	1138	Telegrams .....		3 80
22	Cornell Engr. Co.....	1139	Photographs .....		25 40
22	W. H. England.....	1140	Insurance on horse barn .....		50 00
November					
7	Zella Williams .....	1141	Premiums .....	5 50	
8	Lindell Hotel .....	1142	Board bill members Board .....		179 25
8	Harry Porter .....	1143	Supplies .....		6 95
8	W. R. Mellor.....	1144	Salary for October....		166 65
8	Mary C. Fox.....	1145	Salary for October....		65 00
8	Chas. Scully .....	1146	Salary for October....		16 66
8	Adams Express Co.....	1147	Express .....		75
8	American Express Co....	1148	Express .....		3 32
8	Melick's Stables .....	1149	Livery .....		1 00

Date.	To Whom Issued.	No.	For What Issued.	Prem.	Misc.
November					
8	Globe Delivery Co.....	1150	Freight and drayage..		10 28
18	C. J. Tracy.....	1151	Bal. police pay-roll...		25 34
8	Twentieth Cent. Farmer..	1152	Extra advertising.....		50 00
8	Hammond Printing Co.....	1153	McIntyre Inserts .....		5 30
14	Mamie A. Shaw.....	1154	Lost tray cloth.....		4 00
14	John G. Griess.....	1155	Services of band, re- fund of tickets.....		11 50
14	W. E. Bullock.....	1156	Bal. cleaning up grounds		42 00
	Void .....	1157			
14	Neb. Telephone Co.....	1158	Phone for November..		3 00
December					
3	Mary C. Fox.....	1159	November salary .....		65 00
3	William R. Mellor.....	1160	November salary .....		166 65
17	C. E. Buerstetta.....	1161	Premiums .....	10 00	
18	Chas. Scully .....	1162	November salary .....		16 66
18	Searle & Chapin Lum. Co.	1163	Shingles .....		3 75
18	Globe Delivery Co.....	1164	Freight .....		25
18	Harry Porter.....	1165	Supplies .....		3 90
18	Neb. Telephone Co.....	1166	Telephone .....		3 00
18	J. W. Burleigh.....	1167	Printing .....		6 00
18	Dierks Lumber Co.....	1168	Lumber for shelving..		8 95
18	E. C. Montgomery.....	1169	Corn Improvers' Assn.		150 00
18	E. C. Bishop.....	1170	Boys' and girls' corn growing contest .....		200 00
18	State Journal Co.....	1171	Diplomas .....		75 00
18	Harry W. Olderog.....	1172	1st prem. acre corn contest .....		50 00
18	Roy R. Johnson.....	1173	2d prem. acre corn contest .....		40 00
18	P. C. Molgard.....	1174	3d prem. acre corn contest .....		30 00
18	Alva Fry .....	1175	4th prem. acre corn contest .....		20 00
18	Horace E. Baker.....	1176	5th prem. acre corn contest .....		10 00
18	Edmund F. Field.....	1177	Premiums, Class "H"	1 00	
27	J. J. Cooper.....	1178	Premiums, Class "F"	2 00	
31	Chas. Scully .....	1179	Salary for December..		16 66
31	M. C. Fox.....	1180	Salary for December..		65 00
31	Benton Bros. ....	1181	Postage and printing.		24 20
31	W. R. Mellor.....	1182	Salary for December..		166 65

LIST OF OUTSTANDING WARRANTS ISSUED PREVIOUS TO THE  
YEAR 1905, NOT PRESENTED FOR PAYMENT.

Warrant No.	Amount
482 .....	\$12 00
678 .....	2 40
680 .....	2 00
714 .....	25
923 .....	75
	<hr/>
	\$17 40

LIST OF OUTSTANDING WARRANTS ISSUED DURING YEAR 1905,  
AND NOT PRESENTED FOR PAYMENT.

Warrant No.	Amount
491 .....	\$8 00
831 .....	10 00
679 .....	1 00
865 .....	50
875 .....	50
858 .....	25
1026 .....	1 00
1126 .....	10 00
842 .....	25
877 .....	1 00
959 .....	25
1098 .....	5 50

List of warrants (series of 1906) canceled and marked void: Nos. 181, 258, 283, 304, 338, 339, 340, 341, 351, 352, 353, 354, 356, 358, 359, 368, 405, 416, 417, 441, 498, 503, 515, 528, 567, 586, 640, 655, 786, 1032, 1080, 1157.

LIST OF WARRANTS ISSUED DURING YEAR 1906 AND NOT PRE-  
SENTED FOR PAYMENT.

Warrant No.	Amount
155 .....	\$25 00
377 .....	36 50
636 .....	50
663 .....	25
681 .....	50
696 .....	1 50
736 .....	2 50
749 .....	1 50
750 .....	2 50
782 .....	1 50
860 .....	2 00
939 .....	50
1016 .....	2 00
1029 .....	50
1178 .....	2 00
1181 .....	24 20
602 .....	2 00
	<hr/>
Total .....	\$105 45

COMPARATIVE STATEMENT OF THE FINANCIAL AFFAIRS OF THE NEBRASKA STATE  
BOARD OF AGRICULTURE.

Year	Balance	General Admission	Amphitheatre	Quarterly Stretch	R. R. Coupons	Concessions	Speed Department	Stalls and Pens	Wagon Permits	Camping Permits	State Apportionment	Score Card	Miscellaneous Items	Forage	Fair, where held
1891	\$13405 25	\$11577 00	\$2489 25	\$954 50	\$15165 00	\$3780 00	3863 00	\$916 50	\$453 50	\$137 00	\$2000 00	475 00	\$1106 61	2411 90	Lincoln
1892	152284 89	11902 50	2761 50	542 00	13203 50	3357 50	5112 95	1234 50	303 50	147 00	2000 00	50 00	564 41	691 55	Lincoln
1893	12870 43	9411 50	1826 75	231 00	4473 35	8229 65	4251 00	813 50	182 00	109 50	2000 00	75 00	706 00	437 25	Lincoln
1894	2378 58	7977 50	1590 00	200 00	8756 25	2026 50	2572 50	841 05	100 00	60 00	2000 00	60 00	643 27	386 30	Lincoln
1895	4 88	23590 00	5757 00	86 50	8663 25	3453 80	3534 00	1205 94	57 00	21 50	2000 00	87 50	5327 05	444 80	Omaha
1896	1039 88	18917 50	2066 75	313 00	6790 00	3384 50	3337 20	487 25	98 00	3 00	2000 00	100 00	2445 94	253 80	Omaha
1897	322 95	14672 00	2368 25	203 50	6790 00	2695 10	3312 54	1278 42	139 00	10 50	2000 00	75 00	3238 05	391 00	Omaha
1898	1448 86														No fair
1899	445 52														No fair
1900	244 46	9717 50	1933 55	61 00	7088 25	2158 79	1228 90	454 66	94 00	31 50	6000 00	Lincoln	3890 78		Lincoln
1901	391 73	12323 50	2196 50	119 50	5719 00	3063 05	1046 45	723 55	40 50	29 00	3000 00	100 00	823 99		Lincoln
1902	2543 26	15511 00	2565 50	198 50	7288 00	2378 41	2005 75	810 00	184 00	25 00	3000 00	100 00	1504 66		Lincoln
1903	1557 42	18525 00	3900 00	486 50	7905 50	4083 41	2577 40	1161 00	180 00	29 50	3000 00		744 35		Lincoln
1904	6157 89	16634 50	4667 75		9909 75	4177 57	1644 75	1900 00	215 15	33 50	3000 00		510 34		Lincoln
1905	15646 41	15498 50	2896 50	455 25	10456 25	5204 80	1409 90	1145 00	91 00	2 50	3000 00		756 15		Lincoln
1906	37405 12	28672 50	7380 75		16614 75	5516 50	2711 40	1322 10	126 50	6 00	3000 00		409 83		Lincoln

## REAM SCORE CARD

COUNTY

1906

PRODUCT	No. of Pla.	No. of Varieties	Good	Medium	Poor	Taste	Good Features	Bad Features	Score
CORN.....	100								
WHEAT.....	100								
OATS.....	100								
BARLEY.....	100								
RYE.....	100								
Other Varieties Grain.....	100								
Native Grasses.....	100								
Tame Grasses.....	100								
Potatoes.....	100								
Onions.....	100								
Cabbage and Beets.....	100								
Squashes, Melons and Pumpkins.....	100								
Grain in Sheaf.....	100								
Miscellaneous.....	100								
Artistic General Display.....	100								
No. of Varieties.....	100								
Total No. of Points.....	1000								
Total No. of Points Scored.....									

## Score of Exhibit

NOTE—First four columns give judge number and quality of varieties of each exhibit. In column under "taste" limit to 3 in each or a total of 45 in the 15 exhibits, leaving a possible 55 to be gained in "Artistic general display." In "No. of Varieties" the score will be found by comparison after all counties are scored.

Judges.



President Youngers: The report of the Treasurer is next in order. We will now hear from Mr. Russell.

Treasurer E. Z. Russell read as follows:

### TREASURER'S REPORT.

LINCOLN, NEBR., January 15, 1907.

*To the Members of the State Board of Agriculture.*

GENTLEMEN: Your Treasurer would beg leave to submit the following report of the moneys handled by him during the year 1906.

Jan. 17. Balance on hand .....\$11,079 03

### RECEIPTS.

#### MISCELLANEOUS.

Jan. 31. Use of barns and pavillon.....	\$40 00
Feb. 23. Interest on time deposits.....	50 00
April 13. Refund express "Morrill" .....	1 43
Aug. 3. Overcharge engraving, Baker Bros.....	2 27
Sept. 7. Amount over with clerk of the bank.....	11 70
15. Rent of cots .....	7 50
21. Sale of cheese .....	98
21. Sale of lumber .....	11 80
29. Rent of barns .....	40 00
Oct. 20. Returned premiums .....	3 00
Nov. 10. Rent of barns .....	40 00
10. Interest on deposits .....	150 00
14. Rent of barns .....	17 00
14. Lumber sold .....	9 15
Dec. 18. Sale of tanks .....	10 00
31. Rent of barns .....	155 00
Total miscellaneous .....	409 83
Total received from concessions .....	6,516 50
Total received from stalls and pens.....	1,332 10
Total received from speed .....	2,711 40
Total received from camp permits.....	6 00
Total received from dray licenses .....	126 50
Total received from Shorthorn special premiums.....	450 00
Total received from general admissions.....	28,872 50
Total received from amphitheater and reserved seats.....	7,830 75
Total received from coupons, B. & M.....	12,975 25
Total received from coupons, U. P.....	1,606 50
Total received from coupons, C. & N. W.....	2,033 00
Received state warrant .....	3,000 00
Grand Total all receipts .....	\$78,941 36
Less warrants paid .....	41,543 24
Balance on hand January 15.....	\$37,406 24

Respectfully submitted,

E. Z. RUSSELL, Treasurer.

ITEMIZED STATEMENT OF RECEIPTS GIVEN BY E. Z. RUSSELL.  
TREASURER OF THE STATE BOARD OF AGRICULTURE FOR  
MONEYS RECEIVED FROM THE SECRETARY FOR THE YEAR  
1907.

Receipt No.	Amount.	Receipt No.	Amount.
2 .....	\$40 00	42 .....	35 00
3 .....	50 00	43 .....	230 00
4 .....	152 00	44 .....	273 50
5 .....	1 43	45 .....	101 70
6 .....	49 00	46 .....	240 00
7 .....	555 10	47 .....	468 00
8 .....	38 00	48 .....	84 00
9 .....	225 00	49 .....	25 00
10 .....	107 50	50 .....	233 00
11 .....	85 00	51 .....	238 00
12 .....	195 25	52 .....	54 00
13 .....	170 27	53 .....	340 00
14 .....	274 25	54 .....	270 00
15 .....	127 00	55 .....	69 35
16 .....	309 00	56 .....	49 80
17 .....	187 00	57 .....	400 00
18 .....	57 00	58 .....	551 00
19 .....	118 00	59 .....	58 00
20 .....	406 65	60 .....	75 00
21 .....	100 00	61 .....	102 00
22 .....	65 00	62 .....	2 00
23 .....	70 00	63 .....	129 00
24 .....	144 00	64 .....	1 00
25 .....	145 00	65 .....	426 80
26 .....	108 60	66 .....	105 00
27 .....	100 00	67 .....	249 80
28 .....	160 00	68 .....	53 78
29 .....	200 00	69 .....	40 00
30 .....	90 00	70 .....	52 00
31 .....	41 65	71 .....	442 50
32 .....	70 00	72 .....	10 50
33 .....	285 00	73 .....	190 00
34 .....	225 00	74 .....	88 25
35 .....	35 00	75 .....	15 00
36 .....	45 00	76 .....	10 00
37 .....	70 00	77 .....	11 70
38 .....	244 95	78 .....	6 00
39 .....	100 00	79 .....	53,318 00
40 .....	145 00	80 .....	3,000 00
41 .....	230 00		
		Total .....	\$67,870 33

WARRANTS, 1906 ISSUE, PAID BY E. Z. RUSSELL, TREASURER  
NEBRASKA STATE BOARD OF AGRICULTURE.

Warrant No.	Amt.	Warrant No.	Amt.
1.....	\$255 00	44.....	2 00
2.....	4 18	45.....	16 68
3.....	1 00	46.....	30 00
4.....	57 00	47.....	1 00
5.....	50 00	48.....	2 00
6.....	4 00	49.....	35 45
7.....	1 75	50.....	1 40
8.....	5 70	51.....	7 60
9.....	5 50	52.....	6 00
10.....	2 90	53.....	16 45
11.....	5 00	54.....	7 91
12.....	2 90	55.....	2 50
13.....	35	56.....	6 75
14.....	2 10	57.....	7 45
15.....	2 00	58.....	1 50
16.....	6 10	59.....	3 30
17.....	2 90	60.....	2 00
18.....	1 50	61.....	1000 00
19.....	1 90	62.....	6 00
20.....	5 50	63.....	3 00
21.....	10 60	64.....	1 50
22.....	1 40	65.....	1 00
23.....	1 20	66.....	65 00
24.....	3 75	67.....	4 00
25.....	1 40	68.....	48 00
26.....	4 90	69.....	166 65
27.....	3 25	70.....	6 00
28.....	2 45	71.....	45 25
29.....	1 05	72.....	4 62
30.....	1 20	73.....	66 92
31.....	3 95	74.....	22 25
32.....	2 80	75.....	4 45
33.....	2 45	76.....	60 00
34.....	5 25	77.....	1 50
35.....	1 90	78.....	150 00
36.....	6 30	79.....	6 00
37.....	37 00	80.....	33 33
38.....	20 00	81.....	65 00
39.....	1 00	82.....	166 65
40.....	2 85	83.....	330 00
41.....	91 38	84.....	15 00
42.....	56 71	85.....	18 00
43.....	75 27	86.....	59 40

# REPORT OF ANNUAL MEETING.

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Warrant No.	Amt.	Warrant No.	Amt.
87.....	50 00	130.....	65 00
88.....	100 00	131.....	166 65
89.....	12 50	132.....	2 20
90.....	23 25	133.....	9 50
91.....	75	134.....	46 50
92.....	65 00	134a.....	1 05
93.....	166 65	135.....	1000 00
94.....	52 90	136.....	432 85
95.....	50	137.....	16 50
96.....	2 00	138.....	16 08
97.....	65 00	139.....	8 75
98.....	339 00	140.....	12 00
99.....	16 66	141.....	8 48
100.....	216 75	142.....	78 00
101.....	166 65	143a.....	17 74
102.....	21 24	143b.....	96 75
103.....	2 15	144.....	12 50
104.....	57 65	145.....	275 00
105.....	36 00	146.....	248 00
106.....	40 00	147.....	55 50
107.....	20 00	148.....	216 60
108.....	39 50	149.....	13 00
109.....	10 00	150.....	6 00
110.....	10 00	151.....	20 59
111.....	10 00	152.....	6 00
111b.....	150 00	153.....	70 00
112.....	7 50	154.....	250 00
113.....	13 65	156.....	250 00
114.....	500 00	157.....	150 00
114b.....	166 65	158.....	50 00
115.....	65 00	159.....	40 00
116.....	32 70	160.....	200 00
117.....	21 24	161.....	22 50
118.....	75 00	162.....	40 00
119.....	50	163.....	75 00
120.....	12 25	164.....	75 00
121.....	106 50	165.....	2 00
122.....	52 53	166.....	75 50
123a.....	16 75	167.....	80 80
123b.....	1 46	168.....	50 00
124.....	6 88	169.....	11 55
125.....	20 70	170.....	50 53
126.....	262 00	171.....	20 00
127.....	2 45	172.....	2 00
128.....	27 15	173.....	28 00
129.....	16 66	174.....	12 85

Warrant No.	Amt.	Warrant No.	Amt.
175 .....	48 23	222 .....	450 00
176 .....	331 16	223 .....	200 00
177 .....	1 45	224 .....	25 00
178 .....	11 78	225 .....	100 00
179 .....	5 00	226 .....	325 00
180 .....	26 60	227 .....	50 00
182 .....	38 50	228 .....	300 00
183 .....	150 00	229 .....	25 00
184 .....	2 00	230 .....	141 25
185 .....	400 00	231 .....	200 00
186 .....	27 00	232 .....	225 00
187 .....	13 65	233 .....	25 00
188 .....	364 35	234 .....	90 00
189 .....	6 00	235 .....	22 50
190 .....	15 00	236 .....	20 00
191 .....	16 00	237 .....	41 25
192 .....	16 00	238 .....	225 00
193 .....	30 00	239 .....	37 50
194 .....	96 20	240 .....	100 00
195 .....	53 90	241 .....	50 00
196 .....	53 55	242 .....	50 00
197 .....	4 30	243 .....	667 00
198 .....	25 10	244 .....	58 00
199 .....	37 55	245 .....	20 00
200 .....	15 20	246 .....	50 00
201 .....	100 00	247 .....	60 00
202 .....	100 00	248 .....	15 00
203 .....	112 50	249 .....	50 00
204 .....	100 00	250 .....	60 00
205 .....	50 00	251 .....	60 00
206 .....	225 00	252 .....	60 00
207 .....	12 50	253 .....	60 00
208 .....	450 00	254 .....	41 25
209 .....	100 00	255 .....	15 00
210 .....	25 00	256 .....	7 50
211 .....	25 00	257 .....	4 30
212 .....	7 50	259 .....	50 00
213 .....	275 00	260 .....	25 00
214 .....	50 00	261 .....	151 80
215 .....	12 50	262 .....	2 50
216 .....	187 50	263 .....	15 00
217 .....	12 50	264 .....	2 50
218 .....	87 50	265 .....	167 50
219 .....	225 00	266 .....	12 85
220 .....	37 50	267 .....	15 00
221 .....	12 50	268 .....	2 40

# REPORT OF ANNUAL MEETING.

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Warrant No.	Amt.	Warrant No.	Amt.
269.....	10 48	320.....	32 00
270.....	11 65	321.....	16 00
271.....	9 00	322.....	9 00
272.....	7 71	323.....	77 62
273.....	4 64	324.....	64 12
274.....	5 55	325.....	46 37
275.....	5 13	326.....	250 36
276.....	10 00	327.....	217 11
277.....	40 50	328.....	161 71
278.....	24 00	329.....	195 12
279.....	25 00	330.....	181 73
280.....	38 50	331.....	161 90
281.....	21 00	332.....	159 36
282.....	5 00	333.....	159 36
283.....	35 00	334.....	171 68
285.....	6 00	335.....	177 28
286.....	11 00	336.....	162 40
287.....	7 00	337.....	96 87
288.....	6 00	342.....	70 75
289.....	2 00	343.....	69 50
290.....	40 00	344.....	66 12
291.....	11 00	345.....	62 50
292.....	22 00	346.....	62 25
293.....	6 00	347.....	55 87
294.....	3 00	348.....	50 00
295.....	4 00	349.....	42 12
296.....	2 00	350.....	11 00
297.....	7 00	355.....	17 00
298.....	5 00	357.....	117 50
299.....	7 00	360.....	16 75
300.....	3 00	361.....	10 00
301.....	58 00	362.....	56 00
302.....	61 50	363.....	47 00
303.....	37 50	364.....	8 00
305.....	4 00	365.....	8 00
306.....	55 00	366.....	11 00
307.....	44 00	367.....	61 00
308.....	32 50	369.....	116 00
310.....	32 50	370.....	91 00
311.....	16 00	371.....	36 50
312.....	100 00	372.....	43 00
313.....	60 25	373.....	30 00
314.....	400 00	374.....	5 00
315.....	53 00	375.....	10 00
316.....	75 00	376.....	26 00
319.....	90 50	378.....	13 00

Warrant No.	Amt.	Warrant No.	Amt.
379	32 00	429	18 95
380	12 00	430	7 50
381	20 00	431	22 00
382	3 00	432	15 00
383	5 00	433	500 00
384	12 50	434	40 00
385	3 00	435	15 00
386	26 00	436	15 00
387	6 00	437	8 00
388	3 00	438	60 00
389	25 00	439	190 40
390	6 00	440	50 00
391	5 00	442	5 00
392	4 00	443	65 00
393	3 00	444	166 65
394	6 00	445	31 00
395	29 25	446	2 00
396	17 00	447	6 30
397	17 00	448	125 00
398	17 00	449	8 00
399	36 87	450	25 00
400	6 00	451	25 00
401	8 80	452	16 00
402	31 10	453	87 00
403	16 00	454	25 00
404	15 25	455	75 00
406	4 50	456	25 00
407	4 50	457	20 00
408	25 00	458	150 00
409	16 00	459	25 00
410	30 00	460	50 00
411	25 00	461	50 00
412	28 00	462	35 00
413	24 00	463	35 00
414	50 00	464	25 00
415	40 00	465	19 40
418	25 60	466	200 00
419	69 50	467	54 25
420	27 15	468	375 00
422	32 50	469	25 24
423	180 00	470	40 00
424	313 01	471	200 00
425	33 10	472	34 85
426	200 00	473	800 00
427	143 85	474	300 00
428	27 00	475	200 00

Warrant No.	Amt.	Warrant No.	Amt.
476.....	200 00	525.....	3 50
477.....	200 00	526.....	1 50
478.....	200 00	527.....	1 00
479.....	300 00	529.....	5 25
480.....	75 00	530.....	2 50
481.....	40 00	531.....	5 25
482.....	30 00	532.....	7 50
483.....	486 13	533.....	2 25
484.....	291 00	534.....	3 75
485.....	10 65	535.....	50
486.....	14 00	536.....	1 50
487.....	9 00	537.....	14 25
488.....	9 00	538.....	1 00
489.....	40 00	539.....	1 00
490.....	50 00	540.....	8 75
491.....	40 00	541.....	3 50
492.....	40 00	542.....	11 75
493.....	24 00	543.....	3 50
494.....	36 65	544.....	6 25
495.....	800 00	545.....	1 75
496.....	2 00	546.....	16 50
497.....	350 34	547.....	2 00
499.....	1 50	548.....	2 50
500.....	25 00	549.....	3 50
501.....	3 00	550.....	2 25
502.....	27 62	551.....	1 00
504.....	55 00	552.....	59 00
505.....	18 00	553.....	20 50
506.....	28 50	554.....	39 50
507.....	40 00	555.....	27 00
508.....	25 00	556.....	55 00
509.....	3 75	557.....	28 50
510.....	1 00	558.....	32 50
511.....	16 66	559.....	43 00
512.....	224 00	560.....	38 00
513.....	2 90	561.....	75 50
514.....	1 25	562.....	2 00
516.....	3 00	563.....	8 00
517.....	6 75	564.....	10 00
518.....	1 00	565.....	83 00
519.....	50	566.....	215 00
520.....	11 25	568.....	59 00
521.....	4 50	569.....	27 00
522.....	1 00	570.....	91 00
523.....	7 75	571.....	83 00
524.....	6 00	572.....	104 00



Warrant No.	Amt.	Warrant No.	Amt.
573.....	15 00	621.....	2 00
574.....	21 00	622.....	7 00
575.....	18 00	623.....	5 00
576.....	17 00	624.....	6 00
577.....	9 00	625.....	6 00
578.....	101 00	626.....	70 00
579.....	43 00	627.....	17 00
580.....	4 00	628.....	4 00
581.....	19 00	299.....	13 00
582.....	5 00	630.....	59 00
583.....	4 00	631.....	6 00
584.....	3 00	632.....	18 00
585.....	4 00	633.....	11 00
587.....	52 00	634.....	2 50
588.....	34 00	635.....	50
589.....	33 00	637.....	2 50
590.....	21 00	638.....	6 25
591.....	95 00	639.....	6 50
592.....	16 00	641.....	3 50
593.....	1 00	642.....	5 25
594.....	128 50	643.....	7 25
595.....	78 00	644.....	1 25
596.....	10 00	645.....	4 00
597.....	19 00	646.....	1 50
598.....	40 00	647.....	1 75
599.....	6 00	648.....	25
600.....	3 00	649.....	4 75
601.....	1 00	650.....	25
603.....	6 00	651.....	1 75
604.....	34 00	652.....	1 50
605.....	11 00	653.....	1 25
606.....	5 00	654.....	75
607.....	99 00	656.....	50
608.....	88 00	657.....	9 25
609.....	49 00	658.....	10 00
610.....	28 00	659.....	88
611.....	15 50	660.....	2 25
612.....	7 00	661.....	2 25
613.....	15 00	662.....	4 25
614.....	103 00	664.....	38
615.....	105 00	665.....	75
616.....	11 00	666.....	3 50
617.....	29 00	667.....	50
618.....	6 00	668.....	50
619.....	7 00	669.....	50
620.....	9 00	670.....	1 50

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Warrant No.	Amt.	Warrant No.	Amt.
671.....	75	719.....	1 00
672.....	50	720.....	6 00
673.....	1 25	721.....	6 75
674.....	39 00	722.....	14 50
675.....	27 00	723.....	2 00
676.....	48 00	724.....	16 25
677.....	3 00	725.....	50
678.....	4 00	726.....	50
679.....	3 00	727.....	1 00
680.....	1 00	728.....	1 50
682.....	1 50	729.....	4 00
683.....	2 00	730.....	4 50
684.....	4 50	731.....	3 50
685.....	8 50	732.....	3 00
686.....	1 50	733.....	3 50
687.....	1 00	734.....	32 00
688.....	5 50	735.....	2 00
689.....	1 00	737.....	2 75
690.....	50	738.....	10 00
691.....	3 50	739.....	2 50
692.....	3 00	740.....	7 00
693.....	2 00	741.....	1 00
694.....	1 50	742.....	5 00
695.....	1 00	743.....	2 00
697.....	1 00	744.....	3 00
698.....	1 50	745.....	1 00
699.....	1 50	746.....	3 00
700.....	2 00	747.....	1 00
701.....	44 00	748.....	1 50
702.....	12 75	751.....	50
703.....	15 25	752.....	50
704.....	50	753.....	28 00
705.....	3 00	754.....	31 25
706.....	1 50	755.....	1 50
707.....	1 50	756.....	1 50
708.....	1 00	757.....	38 00
709.....	8 50	758.....	1 00
710.....	3 00	759.....	3 00
711.....	3 00	760.....	50
712.....	50	761.....	3 00
713.....	1 50	762.....	1 50
714.....	19 50	763.....	17 50
715.....	1 00	764.....	1 50
716.....	1 50	765.....	1 00
717.....	50	766.....	50
718.....	1 50	767.....	1 50

Warrant No.	Amt.	Warrant No.	Amt.
763	1 00	815	1 00
769	50	816	5 50
770	1 00	817	14 50
771	1 50	818	2 00
772	4 00	819	4 00
773	1 50	820	9 00
774	3 00	821	1 50
775	1 50	822	3 00
776	50	823	8 00
777	1 50	824	5 00
778	1 00	825	7 00
779	2 50	826	4 00
780	1 00	827	2 00
781	50	828	1 00
783	1 00	829	3 00
784	1 50	830	4 00
785	1 00	831	2 00
787	3 00	832	5 50
788	1 00	833	2 00
789	1 00	834	1 00
790	50	835	17 50
791	1 50	836	1 00
792	1 00	837	6 00
793	50	838	1 00
794	50	839	3 50
794b	50	840	4 00
795	1 50	841	1 00
796	1 00	842	3 00
797	1 00	843	2 00
798	1 00	844	2 00
799	1 50	845	2 00
800	1 50	846	2 00
801	50	847	1 00
802	1 50	848	2 00
803	88 40	849	1 00
804	8 00	850	6 00
805	50 00	851	1 00
806	50	852	5 00
807	4 50	853	6 75
808	5 00	854	6 00
809	6 00	855	2 00
810	2 75	856	1 00
811	76 00	857	8 00
812	8 00	858	18 50
813	3 00	859	6 00
814	6 00	861	2 00

## REPORT OF ANNUAL MEETING.

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Warrant No.	Amt.	Warrant No.	Amt.
862	6 00	908	2 50
863	2 00	909	3 50
864	2 00	910	5 75
865	2 00	911	1 00
866	1 00	912	1 00
867	7 00	913	75
868	1 00	914	1 00
869	4 00	915	2 00
870	2 50	916	50
871	15 25	917	3 00
872	7 00	918	1 50
873	11 00	919	4 50
874	1 00	920	3 00
875	2 00	921	4 00
876	4 00	922	2 00
877	7 50	923	3 00
878	75	924	1 50
879	5 50	925	14 50
880	18 00	926	1 50
881	1 00	927	1 00
882	1 50	928	3 00
883	1 00	929	13 50
884	7 50	930	6 00
885	3 00	931	1 50
886	16 75	932	2 00
887	4 00	933	4 00
888	4 50	934	1 50
889	50	935	50
890	2 00	936	50
891	2 00	937	2 00
892	8 00	938	3 00
893	3 50	940	1 00
894	2 00	941	1 00
895	1 00	942	3 00
896	3 00	943	1 00
897	1 00	944	50
898	3 00	945	1 50
899	2 50	946	2 00
900	3 00	947	1 00
901	3 00	948	8 00
902	2 00	949	2 00
903	1 00	950	1 00
904	50	951	2 00
905	1 00	952	2 50
906	5 00	953	2 00
907	3 00	954	3 00

Warrant No.	Amt.	Warrant No.	Amt.
955.....	1 00	1000.....	3 00
956.....	2 50	1001.....	4 00
957.....	2 00	1002.....	3 00
958.....	1 00	1003.....	3 13
959.....	2 20	1004.....	50
960.....	2 00	1005.....	1 50
961.....	5 00	1006.....	2 63
962.....	13 75	1007.....	2 38
963.....	7 50	1008.....	1 00
964.....	75	1009.....	50
965.....	7 75	1010.....	1 00
966.....	32 00	1011.....	1 80
967.....	12 00	1012.....	2 20
968.....	11 00	1013.....	2 50
969.....	75	1014.....	3 00
970.....	1 25	1015.....	2 50
971.....	1 50	1017.....	2 25
972.....	2 50	1018.....	2 50
973.....	1 00	1019.....	50
974.....	5 38	1020.....	2 50
975.....	1 00	1021.....	50
976.....	50	1022.....	3 25
977.....	1 25	1023.....	3 75
978.....	88	1024.....	2 50
979.....	25	1025.....	50
980.....	1 13	1026.....	1 00
981.....	1 13	1028.....	15 75
982.....	38	1029.....	4 50
983.....	50	1030.....	3 00
984.....	1 25	1031.....	2 00
985.....	75	1033.....	1 50
986.....	1 50	1034.....	4 00
987.....	75	1035.....	3 00
988.....	50	1036.....	2 00
989.....	25	1037.....	50
990.....	13 00	1038.....	50
991.....	8 38	1039.....	1 50
992.....	7 00	1040.....	1 50
993.....	5 00	1041.....	50
994.....	14 25	1042.....	3 00
995.....	4 50	1043.....	1 00
996.....	2 00	1044.....	1 50
997.....	3 00	1045.....	2 25
998.....	1 00	1046.....	50
999.....	3 85	1047.....	1 50

Warrant No.	Amt.	Warrant No.	Amt.
1048.....	1 00	1095.....	166 65
1049.....	3 50	1096.....	16 66
1050.....	1 00	1097.....	5 78
1051.....	3 75	1098.....	5 80
1052.....	50	1099.....	29 00
1053.....	1 50	1100.....	2 08
1054.....	1 50	1101.....	6 00
1055.....	1 75	1102.....	75 00
1056.....	1 25	1103.....	28 00
1057.....	2 00	1104.....	7 50
1058.....	1 50	1105.....	10 00
1059.....	4 50	1106.....	27 00
1060.....	5 25	1107.....	65 00
1061.....	1 75	1108.....	2 50
1062.....	1 25	1109.....	27 50
1063.....	2 50	1110.....	4 00
1064.....	75	1111.....	16 00
1065.....	2 00	1112.....	3 00
1066.....	1 25	1113.....	2 50
1067.....	1 00	1114.....	3 00
1068.....	1 25	1115.....	1 50
1069.....	7 50	1116.....	17 00
1070.....	25	1117.....	6 50
1071.....	9 00	1118.....	8 50
1072.....	1 00	1119.....	9 00
1073.....	25	1120.....	41 00
1074.....	1 25	1121.....	2 00
1075.....	40 00	1122.....	4 50
1076.....	60 00	1123.....	2 50
1077.....	5 00	1124.....	9 50
1078.....	4 00	1125.....	2 00
1079.....	3 00	1126.....	1 50
1081.....	98	1127.....	2 00
1082.....	2 50	1128.....	50
1083.....	4 25	1129.....	21 50
1084.....	50	1130.....	70 00
1085.....	6 50	1131.....	50 50
1086.....	52 00	1132.....	4 00
1087.....	79 50	1133.....	7 50
1088.....	4 00	1134.....	16 50
1089.....	12 56	1135.....	50
1090.....	10 13	1136.....	16 00
1091.....	50	1137.....	14 30
1092.....	4 88	1138.....	3 80
1093.....	6 25	1139.....	25 40
1094.....	65 00	1140.....	50 00

Warrant No.	Amt.	Warrant No.	Amt.
1141.....	5 50	1163.....	3 75
1142.....	179 25	1164.....	25
1143.....	6 95	1165.....	3 90
1144.....	166 65	1166.....	3 00
1145.....	65 00	1167.....	6 00
1146.....	16 66	1168.....	8 95
1147.....	75	1169.....	150 00
1148.....	3 32	1170.....	200 00
1149.....	1 00	1171.....	75 00
1150.....	10 28	1172.....	50 00
1151.....	25 34	1173.....	40 00
1152.....	50 00	1174.....	30 00
1153.....	5 30	1175.....	20 00
1154.....	4 00	1176.....	10 00
1155.....	11 50	1177.....	1 00
1156.....	42 00	1179.....	16 66
1158.....	3 00	1180.....	65 00
1159.....	65 00	1182.....	166 65
1160.....	166 65		
1161.....	10 00	Total.....	\$41,543 24
1162.....	16 66		

President Youngers: We will now have the report of the Board of Managers.

Chairman Rudge of the Board of Managers made report, which follows:

#### REPORT OF CHAIRMAN BOARD OF MANAGERS.

##### *To the Members of the Nebraska State Board of Agriculture:*

The year of 1906 has outstripped all former years in progress, expansion and growth of the state of Nebraska, and we commence the year of 1907 with better prospects in many ways than we did the year 1906, and this certainly should encourage us to push to the front and make longer strides in 1907 than any previous year. We certainly have the best agricultural and stock state in the Union, and the best men in the country live here, and with the true Nebraska spirit we have no fear of the results.

It is needless for me to comment on our 1906 fair. You were all there and know the results and what we must now plan for is 1907, which must be a record-breaker. And if we have favorable weather it is up to your Board of Managers, more than any one else, to make it a winner, and if the loyal support given them in the past be continued, and we trust it will, there will be no such thing as failure.

## PERMANENT IMPROVEMENTS, 1906.

Balance on new speed barn .....	\$1,738 89
Three swine barns .....	1,932 00
New walks .....	481 17
New metal culverts .....	96 20

Total expended for permanent improvements..... \$4,248 26

## RECOMMENDATIONS FOR NEW IMPROVEMENTS.

Your Board of Managers make the following recommendations for your consideration:

First—That we appropriate 10 per cent. of balance on hand for sinking fund to be used in case of rainy week and when income should not be enough to pay out.

Second—The installing of a complete sewer system.

Third—The erecting of not less than three modern toilet rooms for men and two more for women.

Fourth—Painting of all buildings.

Fifth—New fish building.

Sixth—New swine barn to take place of temporary shed south of Barn No. 1.

Seventh—The extension of water mains.

Eighth—Extension of walks.

The above recommendations are, we think, about as far as our present funds would accomplish.

We are very much in need of an educational building, machinery hall, agricultural hall, speed barns, modern grand stand, and it will only be a few years when we will need a much larger live stock pavilion.

Your Board of Managers have had eighteen meetings during the past year, and at our meeting December 17, 1906, considered the matter quite fully in regard to asking the present Legislature for appropriation for permanent buildings, of which you are fully informed from our Secretary's report and letters sent out by him, and I trust this meeting will discuss this before they adjourn.

In behalf of the Board, I wish to express our appreciation and thanks to the superintendents and assistant superintendents who gave us their loyal support and best efforts in conducting what I believe the best state fair ever held in Lincoln.

Respectfully submitted,

C. H. RUDGE, Chairman Board of Managers.

[Applause.]



STATEMENT OF E. M. SEARLE, JR., SUPERINTENDENT GATES, NEBRASKA STATE FAIR, OF ALL  
TICKETS TAKEN BETWEEN 7 A. M. AND 6 P. M. AT ALL GATES FROM SEPTEMBER 3 TO 7, 1906.

	B. & M. R. R. Whole Cou- pons	B. & M. R. R. Half Fare	U. P. R. R. Whole Cou- pons	U. P. R. R. Half Fare	C. & N. W. R. R. Whole Coupons	Total R. R. Coupons	State Fair General	Total Paid Main Gates	General Coupons	Concessions	Exhibition Coupons	Employees' Checks	Press Tickets	Total Tickets Main Gates	Amphitheatre	Total Taken
Monday	542	81	76	5	125	746	2315	2361	148	518	772	200	86	5080	928	6008
Tuesday	6045	100	1661	9	1048	7884	7602	15386	229	587	1035	240	298	17720	5775	23495
Wednesday	12788	100	1661	20	2091	16408	22457	38965	262	653	1136	417	711	42154	12398	55090
Thursday	6048	100	752	20	894	7814	20048	27562	353	796	1110	555	629	31305	8450	39755
Friday	333	32	49			414	4888	5302	186	723	1065	490	291	9004	2601	10605
Total	25704	313	3196	25	4068	38306	57510	90916	1170	3307	5068	1872	2010	104263	30685	135248
1905	15957	313	2176	14	2906	21066	30730	51796	1113	2398	4676	1490	1687	63100	11508	74608
1904	15738	243	1982	15	1990	20008	33182	53196	2166	1067	8523	2223	2295	65631	14712	80343
1903	15775					15776	36396	52171	8453		4490	4124	4392	68559	15947	84506
1902	14770					14770	31065	45885	3989		4171	3404	3999	59411	10889	70800
1901	11682					11682	24139	35721	8367		3850	2113	2816	46335	9116	56161
1900	14106					14106	18899	33505	2390		3871	1693	2290	43703	8001	51704

**SCORE OF COUNTY COLLECTIVE EXHIBITS, 1906,**  
Out of a possible 1600.

COUNTIES	Corn	Wheat	Oats	Barley	Rye	Other Varieties Grain	Native Grasses	Tame Grasses	Potatoes	Onions	Cabbage and Beets	Squashes, Melons, and Pumpkins	Grain in Sheaf	Miscellaneous	Artistic General Display	No. of Varieties	Total No. of Points Scored
Adams .....	54	53	63	29	80	20	12	60	25	54	24	28	32	22	70	45	621
Antelope .....	38	41	43	...	60	10	10	30	58	32	42	42	24	21	68	42	566
Box Butte .....	18	22	36	22	47	20	10	80	32	23	62	13	22	41	64	45	556
Brown .....	20	78	44	40	44	20	18	61	90	45	54	29	44	48	78	65	775
Cheyenne .....	...	...	...	...	...	...	...	...	...	...	...	...	30	10	10	10	88
Cumming .....	47	56	43	68	88	25	80	38	30	40	30	38	65	23	78	77	826
Dawes .....	10	33	70	55	71	14	10	37	68	22	47	20	52	28	66	39	642
Franklin .....	49	63	70	60	71	66	27	71	42	12	42	61	36	83	66	64	833
Furnas .....	44	12	30	...	28	14	25	32	24	13	12	42	25	60	65	60	496
Harlan .....	10	25	20	...	30	14	10	15	40	10	14	30	...	13	53	23	337
Hitchcock .....	10	36	25	25	30	13	10	25	15	15	30	35	20	25	53	33	400
Howard .....	68	79	45	60	65	31	43	48	40	50	54	70	38	30	83	64	888
Kearney .....	68	95	78	47	80	85	20	63	30	27	70	78	60	57	85	70	1011
Nemaha .....	80	61	75	15	40	68	24	50	50	68	48	78	77	42	83	81	940
Pawnee .....	75	52	35	60	78	36	30	68	50	65	48	54	65	52	78	71	917
Perkins .....	25	25	12	20	27	37	14	35	35	33	31	35	50	18	69	41	500
Red Willow .....	30	60	20	33	55	20	28	21	10	17	42	30	27	19	73	46	529
Richardson .....	46	36	47	63	32	10	45	87	60	66	38	70	40	48	69	77	894
Saline .....	61	92	65	94	93	90	39	82	72	87	88	88	75	80	95	94	1295
Scott's Bluff .....	10	20	20	25	...	14	13	15	30	35	35	10	...	22	60	32	371
Sherman .....	10	40	12	15	30	10	27	47	15	10	40	34	21	29	62	45	447
Thomas .....	14	12	12	15	25	...	13	48	38	49	45	70	35	30	60	49	513
Washington .....	86	85	92	82	90	50	70	55	47	35	65	63	80	28	90	89	1123
Webster .....	63	46	40	15	22	38	44	36	25	36	80	61	70	96	73	95	840
York .....	37	80	54	50	75	70	30	54	35	36	50	36	42	40	62	65	836

President Youngers: We will now receive the report of the Auditing Committee.

Mr. E. M. Searle, chairman of the Auditing Committee, presented the following report, which, on motion, was received and adopted:

**AUDITING COMMITTEE'S REPORT.**

Your Auditing Committee has carefully checked over the reports of the Secretary and Treasurer and find

Jan. 1, 1906, balance on hand.....\$11,079 03  
Year 1906, collected from all sources..... 67,870 33

Making a total of.....\$78,949 36  
Warrants paid, per Treasurer's report..... 41,543 24

Balance on hand close of year 1906.....\$37,406 12

We also find that this money is deposited as follows:

Columbia National Bank, Lincoln, subject to check.....\$10,906 12  
Columbia National Bank, Lincoln, Cert. Dep. No. 6458..... 2,500 00  
Columbia National Bank, Lincoln, Cert. Dep. No. 6459..... 2,500 00  
Columbia National Bank, Lincoln, Cert. Dep. No. 6689..... 2,500 00  
Columbia National Bank, Lincoln Cert. Dep. No. 6690..... 2,500 00

Loup City State Bank, Loup City, Cert. Dep. No. 66.....	2,500 00
Wisner State Bank, Wisner, Cert. Dep. No. 597.....	2,000 00
Citizens State Bank, Geneva, Cert. Dep. No. 10033.....	2,000 00
Sutton National Bank, Sutton, Cert. Dep. No. 24244.....	2,000 00
First State Bank, St. Paul, Cert. Dep. No. 11786.....	2,000 00
Plateau State Bank, Herman, Cert. Dep. No. 2278.....	2,000 00
Banking House A. Castetter, Blair, Cert. Dep. No. 12324.....	2,000 00
Citizens State Bank, Blair, Cert. Dep. No. 305.....	2,000 00

Total .....\$37,406 12

In comparing the Treasurer's report with the report of the Secretary, we find warrants of 1906 issue amounting to \$105.45 outstanding, same never having been presented for payment.

We find the books and accounts of your Secretary and Treasurer carefully kept, making the work of the committee a pleasure to perform. We also wish to compliment the Nebraska State Board of Agriculture on the large amount of cash on hand and the businesslike methods of all your officers in the good work done as shown by the records of all officers. Respectfully submitted,

E. M. SEARLE, JR.,  
O. E. MICKEY,  
O. P. HENDERSHOT,

Committee.

[Applause.]

On motion, the report of the Auditing Committee, as read by E. M. Searle, Jr., chairman of the said committee, was received and adopted.

President Youngers: Next will be the report of Committee on Revision of Premium List.

Mr. G. W. Hervey: This committee has been working constantly for the past two days and are not ready to report. We will try to have a report ready for tomorrow's meeting, though it is doubtful if we will be able to complete our work, but will be able to make some kind of a report by tomorrow morning.

Motion made to allow committee further time.

President Youngers: You have heard the motion that this committee be granted further time to prepare report, what shall we do with it? All in favor of the motion signify by saying aye.

Motion carried and committee granted further time to report.

President Youngers: What is the further pleasure of the meeting, gentlemen?

Mr. Vincent Arnold: I move that a committee of three be appointed to report upon the recommendations of the President, Secretary and Board of Managers.

Mr. C. H. Rudge: I second the motion. Put and carried.

President Youngers appointed Messrs. Arnold, Barry and Mann as Committee on Recommendations.

President Youngers: What is your further pleasure, gentlemen?

Secretary Mellor: I desire to introduce the following resolution:

RESOLUTION.

WHEREAS, The Nebraska State Board of Agriculture, having a pride in the wonderful agricultural development of our commonwealth, which in a few years has risen from a vast wilderness to the third agricultural state in the Union, and being firmly convinced of the value of object lessons for the further advancement, now feel the necessity of providing a way for the erection of permanent buildings on the Nebraska state fair grounds: Therefore, be it

*Resolved*, That a bill be prepared and introduced in the present session of the Nebraska Legislature asking that a levy of one-eighth of a mill on the taxable property of the state be made for the erection of permanent buildings and improvements upon the Nebraska state fair grounds; and be it further

*Resolved*, That we use all honorable means to secure its passage.

I move its adoption.

Mr. O. E. Mickey: I second the motion.

Motion was carried unanimously.

President Youngers: What is there further to come before the meeting, gentlemen?

Secretary Mellor: Before any of the members leave I would like to state that we have tickets here for the poultry show at the Auditorium and the Thursday evening concert by the University Glee Club. We have Mr. Henry Wallace, of Wallaces' Farmer, Des Moines, Ia., with us, who will address the organized bodies of agriculture this evening, and tomorrow we will have Dean Burnett, and wish that any who desire to attend these meetings will please come forward that they may be provided with tickets, because no tickets can be purchased and this is the only method to secure them for these agricultural meetings. We also have some small diaries of the Board of Agriculture to give out.

President Youngers: What is the further business of the meeting?

William Foster: I would like to ask if it is necessary that we go to the State Farm to hold our meeting tomorrow morning, and would like to suggest that we meet here in this room tomorrow morning.

Mr. Keedle: I move that when we adjourn we meet here tomorrow morning at 9 o'clock.

President Youngers: Gentlemen, you have heard the motion, that when we adjourn we meet in this room tomorrow morning at 9 o'clock instead of going to the State Farm.

Mr. Hervey: I heartily endorse the motion; I believe it is the proper thing to do, and would in a great measure make it easier for this Premium Revision Committee. I think it is a wrong thing to take these people out to the State Farm at 9 o'clock.

Secretary Mellor: I am one of the committee who prepared the programs for these winter meetings,—there are three of us,—and I desire to

say, gentlemen, that we hold this meeting here because we could not very well get the use of the Senate Chamber as we did last year. The reason that we meet at the State Farm tomorrow is because all the other bodies of allied agriculture will meet there at 9 o'clock, and the notices have gone out to all interested parties that the meetings will be held there, the room has been secured and assigned for us there by the State Farm people. Of course, as the lawyers say it is always 9 o'clock until it is 10, and I think that we will be able to get out there in plenty of time to complete our work.

W. Z. Taylor: Do I understand that this room will be occupied tomorrow?

Mr. Mellor: This room is rented for tomorrow.

Mr. Taylor: I presume some other room could be had.

Mr. Dinsmore: The committee in charge of the program have secured a room for this Board at the State Farm and it would seem to be entirely settled that we hold our meetings there. Quite a number of people would be disappointed if we should attempt to change the place of meeting as has been announced.

Mr. Rudge: I wish to say that, as the Committee on Arrangements have had a room reserved for this meeting at the State Farm, it would certainly be courtesy on our part to carry out the program as arranged. I think by calling up the Traction Company we can have cars running out on the State Farm line at least every ten minutes for the accommodation of the people in attendance upon these meetings. I think we should meet at the State Farm tomorrow morning, and I move as a substitute that we adjourn to meet at the State Farm at 9 tomorrow. Seconded.

President Youngers: A motion has been made that we meet at the State Farm tomorrow morning at 9. What will you do with the motion, gentlemen?

Motion was carried by majority vote.

Mr. J. B. Dinsmore made the following report on the meeting of the Shorthorn Breeders' Association:

*To the President and Members of the State Board of Agriculture:*

GENTLEMEN: As your representative elected to represent this Board at the annual meeting of the Shorthorn Association, I attended the meeting in the city of Chicago on the 5th of December last. The attendance of members was not as large as in some of the years past. There was a general interest. The outlook for the industry appears to be bright. The meeting was conspicuous by the number of men who are comparatively new to the business. The financial report was most gratifying, showing a hundred thousand dollars of the funds of the society invested in government bonds, and quite a good amount in cash in bank and in office. The matter of funds to be offered at the various state fairs for the present year was left in the hands of the board of directors with power to act.

J. B. DINSMORE.

Mr. Hendershot: What did the association agree to do for the Short-horn breeders of Nebraska for this year?

Mr. Dinsmore: There has been a report made to the Board. It is very much the same as in the past, to extend the premiums where the money paid by an Association is not less than \$500. I think the same will be done this year.

Mr. Leonard: I remember of reading in some report that they would give \$500, providing each fair association give a certain amount, I do not remember what that amount was; and they would also give \$1,000 if the Fair Association would offer a much larger amount. I am satisfied with the amount given heretofore and recommend that we give \$500.

Mr. Charles Mann: I move that we proceed to put in nomination new members to fill the memberships expiring this year.

Motion carried and the following persons placed in nomination:

Mr. C. H. Rudge, J. H. Taylor, I. W. Haws, W. W. Cole, H. L. Cook, J. B. Dinsmore, J. A. Ollis, Jr., W. H. Arnold, O. E. Mickey, C. M. Lewelling, John Ryneerson, O. P. Hendershot, William James, G. R. Williams, W. C. Caley, J. F. McArdle, Charles Bessey, H. B. Loudon, F. E. Bottenfield, W. Z. Taylor, E. M. Searle, Dr. H. Pritchard, Elijah Filley, L. W. Leonard, H. R. Howe, W. F. Johnson.

The following persons requested that their names be withdrawn from nomination:

J. H. Taylor, J. B. Dinsmore and G. R. Williams.

The President appointed the following Committee on Nominations:

Mr. R. M. Wolcott, Geo. F. Dickman, T. W. Smith, George Sheppard, and E. Z. Russell.

President Youngers: The committee will please state what room they will meet in so that parties who desire to meet them may have the opportunity of doing so.

Room No. 247 at the Lindell Hotel was selected, and the hour for committee meeting 7:30.

President Youngers: What is the further pleasure of the meeting?

Mr. Leonard: If there are any more credentials to be handed in we would like to have them.

Mr. Rudge: I believe that in former years that where a member of the Board has not been in attendance on this meeting he had to have an excuse. Now, as I remember, there are some three or four people whose names did not appear on the roll-call and no word has been received from them.

Secretary Mellor: Mr. Apperson could not be here and asked that the Board kindly excuse him. I move that he be excused.

Motion seconded by Mr. Rudge and carried.

Secretary Mellor: I have not heard from Samuel Riley or Mr. L. Morse.

Mr. Dinsmore: The custom has been that where members were not present and were not excused at the meeting their places were filled.

Mr. Youngers: Mr. Morse may be here in the morning, or he might get here tonight; perhaps we had better wait for him until tomorrow morning.

Mr. Bassett: No one doubts Mr. Morse's interest in the society and I move that he be excused. I am satisfied he has a good reason for being absent.

Mr. Rudge: I move we take this up tomorrow morning, as he may come in on the evening train.

Motion of Mr. Rudge was carried.

Mr. Mellor: We have given further time for Mr. Morse's appearance, I move that Mr. Riley be given until tomorrow morning also.

Mr. O. E. Mickey: Mr. Riley's term expires and Mr. Morse's does not.

Mr. Youngers: If we have no further business tonight, a motion to adjourn will be in order.

Mr. O. P. Hendershot: I move that we adjourn to meet at the State Farm tomorrow morning at 9.

Motion carried.

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## SECOND SESSION.

LINCOLN, NEBR., Tuesday evening, January 15, 1907.

The second and evening session of the State Board of Agriculture was held in the chapel of the State University, the principal address being by Mr. Henry W. Wallace, of Des Moines, Ia., as follows:

### TWENTIETH CENTURY FARMING.

A very slight acquaintance with the history of farming during the nineteenth century will convince anyone that twentieth century farming, if it is to maintain the fertility of the soil and insure the permanent prosperity of the United States (which after all is dependent on the prosperity of agriculture), must be very different and greatly superior to the farming of the century preceding.

At the opening of the nineteenth century western Pennsylvania, Ohio, a large part of West Virginia, Kentucky, Tennessee, Mississippi and Louisiana, and all states west of these, were either practically unbroken forests or rich rolling prairies, inhabited for the most part by wild men and wild beasts. The magnificent growth of these forests and the luxuriant herbage of the prairies all indicated a soil of remarkable fertility. During the last century these forests have been swept away, the merest fragment of them remaining at the beginning of the twentieth century.

With incredible toil the farmers of the last century felled the forests, burned the brush, cleared away the fallen timber, pulled the stumps, removed the stones and converted these forests into cultivated fields.

They have drained, broken up, improved and tilled the vast prairies, unbroken at the beginning of the last century, which have deluged the markets of the world with their products.

An energetic, industrious race were these nineteenth century farmers; but the result of their labors has been impoverishment to a greater or lesser degree of the soils they tilled. They were lumbermen, ditchers, miners, rather than farmers. They converted the richness of the soil into grain and live stock, and have become the feeders of the human family over the best portions of the globe; but as a class they failed in the first requisite of good farming, namely, to maintain unimpaired the virgin fertility of the soil.

These men, however, were not all poor farmers. Without agricultural colleges and experiment stations except in the later decades, without an efficient agricultural department until the very last decade, and without much agricultural literature, some of them stumbled on methods of farming which meet to a remarkable degree all the requirements of the scientific agriculture of the present century. But these clearheaded, resolute farmers were in the minority, as is evidenced by the fact that complaints of waning soil fertility come from all the older timbered states east of the Alleghanies and many west of them, from all the southern states, and from portions of the prairie states where cultivation has been general but little over fifty years.

The cry for commercial fertilizers, heard first in the New England states, now comes from Pennsylvania, Ohio, portions of Indiana, Missouri and Texas, and is being heard here and there from Iowa and Kansas. This demand for commercial fertilizers measures the extent of the recognized waste of soil fertility. It is only when the furrows of the land complain, when land sickness begins, that its proprietor calls for a physician; and whether land health is to take the place of land sickness depends on the wisdom of the physician and the willingness of the farmer to follow his advice.

Whatever may be said—and much can be said—to the credit of the farmers of the nineteenth century, it cannot be said that as a class they were successful in maintaining the fertility of the soil and thus putting the nation on a permanent basis of enduring prosperity; for it should never be forgotten that the abiding prosperity of the United States depends not upon the number of the population, nor the wealth of its cities, nor upon its mines, be they never so extensive or valuable, nor upon its manufacturers, nor upon the number and extent of its great railroad systems; nor upon the resources of its trusts; but upon the permanency of the fertility of its soil. There is a ton less of gold, silver, iron, copper, stone, for every ton mined; and the Creator has finished His work of storing these in the bowels of the earth, to be discovered and utilized by man. He has not, however, finished His work in creating the products of the soil from the raw material of sunshine and shower, working through and with the men who till it; and it is



upon this creative force that the future prosperity of the United States must depend.

If we inquire into the characteristics of the soil exhaustion of which there is so wide and general complaint in all the older states and in some of the newer, it will be found that exhausted soil universally lacks humus, that partially decomposed vegetable matter for which the Almighty, in preparing the earth for the home for man, so carefully provided by spreading the prairies each fall with a carpet of dead grass and the forest floor with fallen leaves.

This humus being gradually wasted by constant cultivation for a number of years without rotation, the soil loses its original capacity for absorbing water in a wet time and holding it for the use of the plants during periods of drouth. It no longer separates the particles of soil in order to give full room for root development. Hence the universal complaint that exhausted soils puddle in a wet time and bake in a dry time, and that the country suffers more under both drouths and floods than it did when in a state of virgin fertility. With exhaustion of the humus there is a corresponding exhaustion of the nitrogen of the soil. Furthermore, these lands wash more readily, and exhausted fields turn their tear-furrowed faces heavenward, as if weeping over the lack of wisdom on the part of those who till them.

It cannot have escaped the notice of close observers, that the greater the exhaustion of the soil the greater the number of weeds, both noxious and comparatively innoxious, the reason being that the weed is an unregenerate plant, and can live and thrive under conditions where the improved grasses and bread grains cannot flourish. Hence with the exhaustion of fertility comes the opportunity for thorns and thistles—by which we mean weeds of all kinds—to take possession of the exhausted land, and in their way add to the fertility of the soil by slowly restoring the humus which the farmer has done his best to exhaust. It is a rough way of binding up the broken-hearted land, and the thrift of these polluters of the soil is the punishment inflicted by high heaven on farmers who have failed to understand the language of the weed.

There has doubtless been in some of these lands, the furrows of which complain to their owners and to all passers-by, more or less exhaustion of potash and phosphorus as well as nitrogen, particularly in the non-glaciated areas; for I believe this is far less than is generally supposed. Where this lack exists, it must be remedied by supplying these missing elements of fertility wisely and intelligently, and in connection with good farming and a supply of vegetable matter.

If the above outlines of nineteenth century conditions be correct, it should not be difficult to outline the methods which must be adopted by twentieth century farmers, if they are to maintain their own prosperity and the prosperity of the nation, of which they are to so large an extent the keepers.

It seems to me that in outlining the requirements of twentieth cen-

tury farming, it is best to call the farmer's attention first to the absolute necessity of maintaining the soil in proper physical condition for the growth and maturity of the plants which he cultivates. In order that he may see the necessity of putting and keeping his land in proper physical condition it is necessary that he should understand the root system of plants, not merely the extent of the root development of the various plants which he cultivates, but also the means by which they take their food, always in solution and in the most minute quantities. Hence the necessity of their occupying as much as possible of the soil, and hence the necessity of having the soil in fine tilth. He must understand not merely the root system and the general characteristics of the plants which he grows, but also the water-holding capacity of soils, and the necessity of maintaining a cistern over his entire farm during the months when the plants make their heaviest demands for water, and also the necessity of putting a cover on that cistern in the shape of a mulch of dry dirt during as great a portion of the period of plant growth as possible.

These seem to me to be the very A B C's of farming, and without a knowledge of these it is not possible to succeed except on virgin soils, in favorable seasons, or by accident. The root system of plants cannot possibly be properly developed without the soil being in first-class physical condition; nor can soils out of first-class physical condition in seasons of partial drouth ever supply the amount of water required for the full development of the plant.

There are many soils which are supposed to be exhausted, which, by a judicious system of tillage, will afford fairly good and paying crops without the use of any fertilizer, if once put in proper physical condition.

I do not believe that the great farmer of farmers, after spending countless ages in preparing this great country for the home of man, ever intended that its fertility should be permanently exhausted by one or two generations of so-called farmers, who made it the chief end and aim of their existence to "hog in" and appropriate to themselves the fertility which He was so long in preparing. No land that was good to begin with can be permanently exhausted by one or two or even three generations of farmers, however badly they may farm. The great Creator, however, wisely locks up the fertility, and when man has put the land out of physical condition by the exhaustion of the humus, gives him only such crops as will barely pay expenses and keep him from starvation, awaiting the time when a farmer who understands the A B C's of farming, and thus has a key to unlock the soil, puts in his appearance.

This cry of exhausted land is not a new one. My father bought an exhausted farm, so-called, in 1835, some fields of which were so exhausted that they would produce but eight or ten bushels of wheat per acre; but by first putting it in proper physical condition and then applying lime, which (he did not know why) evidently corrected the acidity of the

soil, applying manure when possible, and then sowing clover, he was able to bring it to a normal yield of from twenty-five<sup>1</sup> to thirty-three bushels per acre, according to the season.

O t

This, then, is the first thing to which the twentieth century agricultural teacher should direct the farmer's attention: the necessity of putting his soil, in seasons where it is possible and as far as possible, in a physical condition suitable to the development of the root system of crops, and enabling them to secure from the underground water sufficient moisture to bring the crop to full maturity. This may be and is difficult in all partially exhausted soils, and more difficult in some seasons than in others; nor can the soil be put in the very best possible physical condition without a supply of humus from some source or other.

If the farmer once understands the necessity for putting his soil in first-class physical condition, it will not take long for him to understand that in order to do this he must have a rotation of crops. Whether the excreta of plant roots (if there be excreta) poison the land for the same kind of crop, or not, none the less all experience teaches that a rotation of crops is essential to good farming. In these later years we understand what our fathers did not: the necessity of having somewhere in the rotation a leguminous crop—clover, alfalfa, cowpeas or beans—in order to increase the nitrogen in the soil, so essential to the development of plant life and to the growth of animals.

Therefore, no matter in what state in the Union the farmer is located, there must be rotation of crops. No one rotation will do for every state nor for every locality. What the rotation should be will depend on the location of the farm with respect to longitude, latitude, elevation and rainfall, on the kind of live stock to be carried, and to some extent on the disposition and qualifications of the farmer. For aid in deciding on the rotation he must rely on his agricultural paper, on the publications of the Department of Agriculture, on his agricultural college and experiment station. The agricultural paper, in fact, is the medium through which he is able to obtain easily the substance of things taught by the teachers above mentioned, with suggestions as to their application to his particular conditions.

There are large sections of the Mississippi Valley, and among them the naturally richest sections, in which it seems to be impossible to convince the farmers of the absolute necessity of a proper rotation. They continue to insist that a rotation of two crops of corn, followed by two crops of oats, or oats and winter or spring wheat, meets all the requirements. In all probability many of them will continue to insist that this is all sufficient, until failing yields, and the immense multiplication of insect pests, and the invasion of noxious weeds, force them too late to adopt a policy which, if adopted in time, might have brought them wealth and comfort instead of adversity and grief.

The craze for extensive rather than intensive farming has been with us, lo! these many years. The twentieth century will demand and en-

force intensive farming. By intensive farming I do not mean necessarily farming on a small scale, nor producing the greatest amount of crop per acre regardless of either expense or profit; nor does intensive farming necessarily exclude extensive farming. There will be large farms in the twentieth century. They will not be farmed on the methods on which most farms have been conducted in the century preceding, however, but with the object of producing the maximum of crop consistent with the maximum of profit. In other words, we shall no longer farm the upper four inches of the soil "with a lick and a promise" (to use in expression common in my boyhood days), but will make the entire soil and subsoil within reach of the plant roots either directly or indirectly tributary to plant production.

This means deeper plowing, as conditions and circumstances may require. It means above all else more thorough cultivation of land both in tillage and pasture. It means improvement in agricultural machinery, and greater skill and intelligence in operating that machinery. Many of the types of machines approved at the beginning of the twentieth century will be put in the junk pile before the first quarter of the century is past. It means heavier and better horses. We are just beginning to understand the philosophy of soil tillage and the necessity of vastly increasing the area through which plant roots can forage.

It need scarcely be said that there must of necessity be a very considerable increase in the numbers, in the quality, and in the value of the live stock on western farms during the twentieth century. Influences are now at work which will force American farmers, whether they will or no, to abandon exclusive grain production and adopt some form of live stock farming. The growth of weeds, the multiplication of insect pests of varieties almost innumerable, the waning fertility of soils that have been long under grain cultivation, will absolutely compel farmers to become students of live stock farming.

The introduction of live stock means a decrease in the acreage under the plow. For live stock, and especially cattle, must be kept on grass as great a portion of the year as possible; and if our pastures are to be profitable, they must produce a much larger amount of grass than they have done heretofore; which means that they must be cultivated on the same principles, but not necessarily in the same way that we cultivate our grain fields. This is true especially of our permanent pasture.

To illustrate what I mean: Why do permanent pastures grow up in ragweed every fall? not all of them, not all parts of them, for there are portions of the field in which blue grass takes the place of ragweed. Why? For various reasons, which I have not time to mention now. This can be remedied, and easily, if the farmer by reseeding with clover and timothy every two or three years keeps his pastures full of healthy, thrifty roots to take the place of weeds. The same may be said of meadows. Such gross carelessness in the management of pastures as we see about us every day cannot long be tolerated in the twentieth century.

Following the methods above indicated, we shall be able to handle live stock in some form or other on land worth from one to two hundred dollars an acre. The kind of live stock, whether horses, cattle, sheep or hogs, will depend on the locality, on the markets, on the character of the land, on the climate and on the tastes of the farmer; but whatever class of live stock is kept, it must necessarily be of the improved type.

The necessity for rotation and grasses as part of the rotation will necessarily decrease the acreage in grain, and in so doing enable us to give it more thorough and intensive cultivation; but it will not necessarily decrease the amount of grain that will be produced on American farms, particularly corn and winter wheat. By following the methods above outlined, there should be no difficulty in making in the next ten years an increase of ten bushels per acre in the average yield of corn in the great corn growing states, and an equal proportionate increase in the average yield of winter wheat; while it is not difficult under twentieth century methods to add 50 per cent if not indeed 100 per cent to the yield of our pastures and meadows.

The breaking up of the great ranges, and the return of normal seasons to that portion of the west which has heretofore been called semi-arid, but which investors now hope will be "like the garden of the Lord, like the land of Egypt, as thou goest unto Zoar," will place upon the farmer in the great corn and grass states the necessity and duty of growing, to his own great profit, the meats to feed the hungry nations. The time is coming when we will grow three billion bushels of corn a year, and six hundred million bushels of winter wheat, and perhaps one billion bushels of oats; and this will all be needed and at prices relatively higher than now. The century will not be half gone, in my judgment, perhaps not a quarter, when we will cease to be exporters of crude products and coarse grains, with the exceptions of the corn required for export to make Scotch whiskey and to balance rations for dairy cows in the dairy countries; nor is the time far distant when we will cease to export wheat or oats at anything like present prices. The limit which nature has put upon the area of agricultural land, even taking into account the possibilities of irrigation, will compel the production of both meat and grain which the world will demand on farms which are now tilled in some sort of way, but which yield far less than their possible production.

If it be asked what kind of live stock will feed on twentieth century farms, it requires no profit to answer. The lard hog will be in evidence everywhere in the corn surplus states, and the bacon hog north, south and west of these states. The sheep industry will thrive on the agricultural lands, not in great herds, but as part of the live stock equipment. There will be a wonderful increase in the numbers and in the capacity of the special purpose dairy cows. The development of our great cities, the increasing wealth of their inhabitants, and the facilities for transporting milk and cream long distances, will make dairying a favorite pursuit of men who are sufficiently enlightened and educated by reading,

by observation and by experience, to make this form of farming pleasant, as far as it can be made pleasant, and profitable.

The breaking up of the great ranges will not necessarily decrease the number of beef cattle produced on these ranges; but it will compel better care and better feeding, we hope with no decline in the breeding. It is quite probable that in the twentieth century the beef steer will be grown on the cheaper lands, not lands destitute of fertility, but lands which by reason of location, or the character of the surface, or distance from market, cannot be used with the maximum of profit for the growing of grain. These cattle will be furnished on the corn lands and great grass lands of the humid region; for the world will demand better and better beef and more of it.

I anticipate a wonderful increase in the numbers and quality of what is called in derision the "all purpose" cow, but which is better described as the special purpose cow for the farmer whose acres are of such extent that he cannot profitably become an exclusive dairyman, and so high in price that he cannot devote himself to the growing of special purpose beef cattle. This man cannot afford to keep a cow for the chance of a calf, nor can he afford to let the grass from his pastures and the forage from his corn fields go to waste; nor can he well afford to pay the transportation to a distant market. Hence he must grow packages in which he may pack these products and thus condense freights, and he must do this from cows on which he has another profit.

In connection with this more general practice of live stock farming, and in connection with greater specializing, there must come improved methods of feeding. The twentieth century farmer cannot afford to guess at the milk production of his dairy cows, nor at the content of butter fat; nor can he guess at the quantity or quality of the feed which he gives to his live stock. He must feed for the special purpose that he has in mind, and therefore, must have a better knowledge of what we term balanced rations than the average farmer of the century preceding or of today. He must understand that the animal cannot work miracles; cannot transform flesh formers into fat, albuminoids into carbohydrates, nor the reverse. He must answer the prayer of the animal which might well be expressed in the words of Agur, the son of Jakeh: "Feed me with the food that is needful for me;" that is, food naturally adapted to the object that you have in view in feeding.

All this will involve a much greater intelligence in the twentieth century farmer than that required of his nineteenth century brother. Fortunately the means for securing the desired information are available to the man who wishes to avail himself of them, so far as books, colleges, experiment stations and agricultural papers can give it. All these are of no avail, however, until there is an appetite created in the mind of the farmer for them. They that are whole, that is, think themselves whole, need no physician; nor would a physician do them any possible good. It is those that are sick and feel themselves sick, that will benefit by the opportunities for agricultural education.

It is perhaps fortunate that the farmers of the nineteenth century are not living in the twentieth, for it is not easy to teach an old dog new tricks; and therefore the hope of agriculture must ever lie in the young men and young women growing up on the farm; not the hope of agriculture merely, but the hope of the nation. For, say what you will about the educational disadvantages of the farm, it is after all the man with the farm education, the education that the farm gives him, that takes the lead in transacting the great business of the world. This, however, furnishes us no excuse for allowing the common schools in all these states to be so poorly equipped with teachers, so poorly attended by pupils, and so neglected as they are by many farmers, whose children can in the very nature of things receive but little better education than that which the country school gives them.

Some may ask: What about commercial fertilizers in the twentieth century? They will no doubt be used, as they are used now, in portions of our great country where the soil robber has done his work. Let us hope that they will be used more intelligently, with the specific object of supplying a known want or lack in the soil, and always in connection with vegetable matter, whether grass roots or manure. It will, however, be a shame and disgrace to the great states of Iowa, Nebraska, Kansas, and large portions of Missouri, Minnesota and the Dakotas, if there shall ever be built up in them a profitable trade in commercial fertilizers. There is no necessity for this in the glaciated area of these states. Except possibly in peaty soils, they have enough of the essential elements of fertility, if farmers will so handle their lands as to keep them rich in vegetable matter and in good physical condition, to supply for all time to come the wants of crops of much greater magnitude than grow now on these prairies. Whether these fields shall wave with the harvests that nature intended them to bear, or whether we shall duplicate the experience of the nineteenth century farmers of the older states, depends entirely on whether the twentieth century farmers have the ability to utilize the magnificent resources of our soil and climate.

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### THIRD SESSION

The members and delegates of the State Board of Agriculture met at 9 a. m. in room 105 at the State Farm Experiment Station Administration Building, with President Youngers in the chair.

President Youngers: If there are any present who have not handed in their credentials, they now have the opportunity before the roll call. Gentlemen, you will now come to order and the Secretary will proceed to call the roll.

After calling of the roll the President announced that "a quorum be-

ing present we will now proceed to business and hear the report of the Committee on Credentials."

Mr. E. Z. Russell: Has the matter of an excuse for Mr. Morse from attendance on this meeting been disposed of?

Secretary Mellor: I received from Mr. Morse a letter in this morning's mail, asking that he be excused, and failed to bring it with me as was my intention. I move that he be excused.

Motion was carried and Mr. Morse excused.

Mr. L. W. Leonard: The Committee on Credentials respectfully submit a report, as follows:

#### COMMITTEE ON CREDENTIALS' REPORT.

We, your Committee on Credentials, beg leave to report as follows; and find the following persons entitled to seats in this meeting:

Boyd County—E. G. Barnum, President, Butte.  
Custer County—W. A. George, President, Broken Bow.  
Clay County—H. B. Loudon, President, Clay Center.  
Dawes County—Charles Mann, President, Chadron.  
Douglas County—Charles Witte, President, Elkhorn.  
Franklin County—Geo. Shepard, President, Macon.  
Frontier County—W. C. Wallam, President, Stockville.  
Furnas County—C. E. Laverack, Delegate, Beaver City.  
Fillmore County—B. B. Ogg, President, Geneva.  
Greeley County—P. H. Barry, President, Greeley Center.  
Gage County—H. C. Crocker, President, Filley.  
Hamilton County—R. L. Mabon, President, Aurora.  
Holt County—C. J. McMannas, President, O'Neill.  
Hitchcock County—W. Z. Taylor, Delegate, Culbertson.  
Johnson County—Hardin W. Miner, President, Tecumseh.  
Knox County—W. C. Caley, President, Creighton.  
Kearney County—T. B. Keedle, Delegate, Minden.  
Lancaster County—S. R. Hall, President, Havelock.  
Nuckolls County—F. E. Bottenfield, President, Nelson.  
Madison County—J. L. Rynearson, President, Madison.  
Pawnee County—F. S. Caldwell, President, Pawnee City.  
Polk County—E. J. Brown, President, Osceola.  
Red Willow County—John W. Dutcher, President, Indianola.  
Saunders County—J. M. Lampert, President, Wahoo.  
Sherman County—C. J. Tracy, Delegate, Loup City.  
Stanton County—Andy Spence, President, Stanton.  
Scotts Bluffs County—Fred D. Wolt, President, Gehring.  
Valley County—J. C. Meese, Delegate, Comstock.  
Washington County—A. C. Jones, President, Blair.  
York County—T. W. Smith, President, York.

L. W. LEONARD,  
JOSEPH ROBERTS,  
J. A. ALLEN, Jr.,  
Committee.



On motion of Mr. I. W. Hawes, the report of the Committee on Credentials was received and adopted.

Mr. O. P. Hendershot: I move that we take up discussion of revision of premium list by paragraph.

Mr. H. L. Cook seconded the motion and same was carried.

President Youngers: We will now hear from the Committee on Revision of Premium List.

Mr. G. W. Hervey, chairman of said committee, stated as follows: This committee found a peculiar condition of things when we started on this work and it is almost impossible for us to present a report, but what would be very tiresome to you. We have attempted to correct numerous mistakes made by the indiscriminately mixing of rules and by-laws. Some of these are rules made by the Board of Managers and others are by-laws adopted by the association, and we have no disposition to shoulder the responsibility for this condition of things upon any one present. It is evident that quite a lot of it is due to the work that has been done in previous years by the various revision committees, making new rules.

#### PROPOSED CHANGES IN PREMIUM LIST, RULES AND REGULATIONS.

The last sentence in article 1, page 11, stricken out, commencing with "official term."

On page 11, transpose articles 2 and word 3 of by-laws and after the word "perpetuation" in line 3 of the present article 3 add the words "and elected for a term of two years."

Change article 4, page 12, to read: "No proxies representing members of the State Board or of County Agricultural Societies shall be received."

In Class "A," Horses, make a lot for "Grade Draft Teams," to be shown on track in front of amphitheatre in the afternoon of Monday, viz.:

	1st.	2d.	3d.
Grade Draft Team, mares or geldings, shown to wagon....	\$25	\$20	\$15
Single drivers in harness to vehicle, to be shown on track in front of amphitheatre on afternoon of Tuesday.....	20	15	10
Double drivers in harness to vehicle, to be shown on track in front of amphitheatre on afternoon of Wednesday....	25	20	15
Class "A," Lot 10, page 27, Saddle Horses; rules and regulations to be specified, to be shown on track in front of amphitheatre on Thursday afternoon .....	\$10	\$8	\$6
	\$5		

On page 27, Lot 6, make the premiums in this lot same as in Lot 1, Horses.

On page 12, article 6, after the word "appointed" in line 14 transpose the sentence following so that it will follow the word "appointed" in line 16, as article 6 now stands.

On page 14, at the close of such article add the words, "such warrants to show on their face the purpose for which drawn."

On page 14, strike out article 15 and insert the words, "All exhibits competing for cash premiums shall be the property of the exhibitor. All agricultural and horticultural products must be the product of the current year in which the fair is held, except when otherwise provided or specified. All articles of domestic manufacture must be made by the exhibitor."

Page 14, article 16, in third line, omit the word "and" after the word "exhibitor," and the words "and number of" after the word "class," and substitute the word "and" for "of" after the word "lot" and the word "number" after the word "premium."

Strike out line 7 and insert the words "on blanks furnished by him."

Strike out article 17 on page 14.

In Class "C," Swine, under head of sweepstakes, make same read as follows:

#### CHAMPION.

Champion boar, any age.....	Ribbon
Reserve champion boar, any age.....	Ribbon
Champion sow, any age.....	Ribbon
Reserve champion sow, any age.....	Ribbon

Page 14, strike out article 27.

Page 14, insert rule 18 and 19 under the Class "C" classification, and omit from the collection of rules.

Page 14, articles 18 and 19, stricken out from this page.

Page 15, strike out article 28 and insert the following in its place: "In all entries in classes A, B, C and D; the register number of the animal entered must be placed on the entry blank, and where the animal is not yet recorded, the register number of both its sire and dam shall appear."

Page 15, strike out article 29 and insert the following: "All animals occupying stables, stalls or pens must be entered for competition and shown in their respective classes."

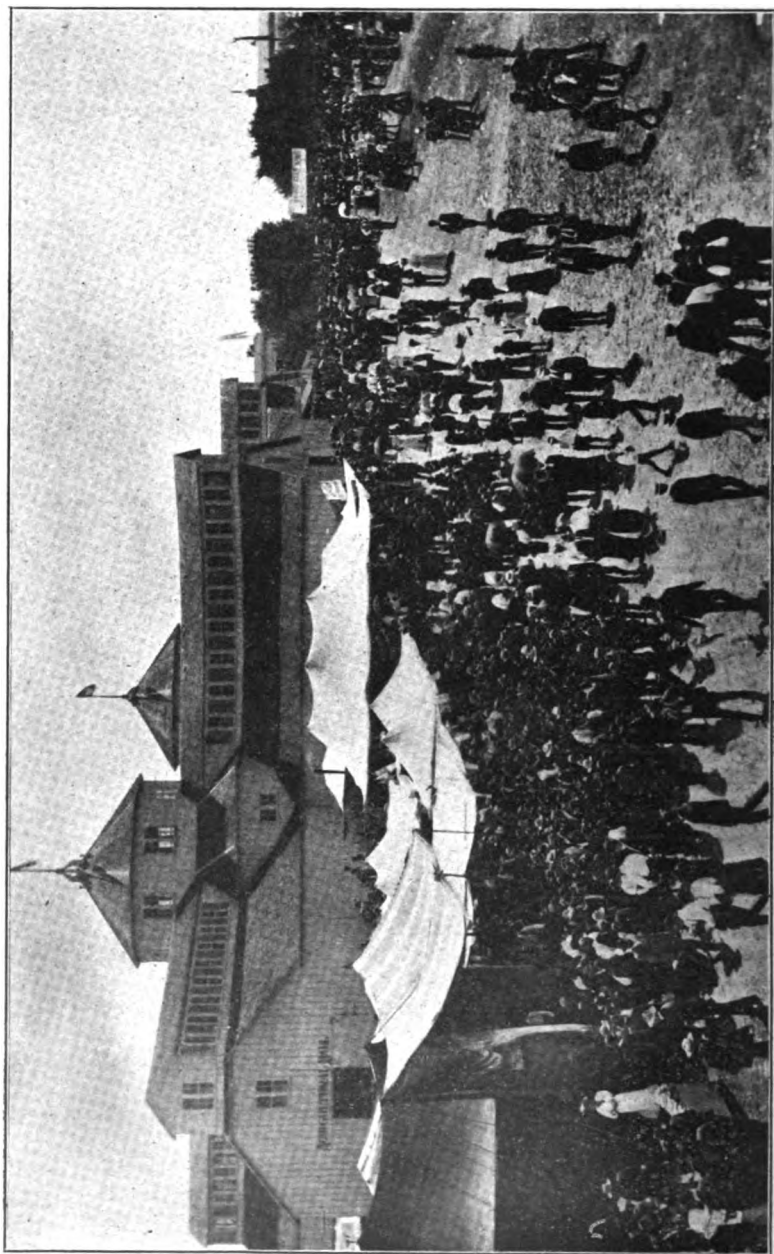
Page 15, strike out article 33 and substitute: "Awards will be made by an expert judge or a committee of three judges, whose decision shall be by ballot and without consultation. Two of the committee shall agree before an award can be made.

The committee or judge shall sign the entry books, which shall be returned to the Secretary at once after the judging is closed.

Page 16, article 35, in fourth line, insert the word "further" between the words "from" and "competition."

Page 16, article 38, second paragraph, insert the words "for appointment" in first line of second paragraph.

Page 19, make rules 47 and 48 all in one lot—48. "He will receive all goods shipped to his care, charges on same being prepaid. But neither he nor the Board of Managers will in any case be responsible for transportation, loss, injury or accident of any kind."



DOWN DUNHAM AVENUE, 1906 STATE FAIR.

## LIVE STOCK, STALLS AND PENS.

Charges for live stock stalls are as follows:

All horse stalls, including speed.....	\$2 00 each
Cattle stalls, double.....	2 00 each
Cattle stalls, single.....	1 00 each
Hog and sheep pens.....	1 00 each

*All applications for stalls, pens and space will be made to the respective superintendents. Fees for stalls and pens in classes A, B, C, D and S must be paid to the superintendent thereof, who shall pay the same into the hands of the Secretary, taking his receipt for the same.*

Stalls and pens can be secured at any time after February 1 and prior to the opening of the fair.

Feed and bedding furnished on grounds at market price.

For further information address

W. R. MELLOR, Secretary.

## TICKET SYSTEM.

Page 19, ninth line, changed to read, "Single admission to quarter stretch, each day, twenty-five cents."

## EXHIBITIONS.

Page 21, rule 59, in third line, change word "whilst" to while. In second line insert the words, "but the persons in charge of animal," between the word "committee" and the word "and," striking out the words "on duty."

Page 21, rule 60, strike out second clause and make it read as follows: "For horses, cattle, swine, and sheep, the association register will be considered authority and can be found in the office of the Board of Managers."

Page 21, rule 61, is to be placed under the heading of classes A, B, C, D and E.

Page 21, rule 63, made in bold-faced type.

Page 21, rule 70, strike out.

Page 21, rule 71, "Intending exhibitors are requested to send to the Secretary asking for entry blanks and premium lists. This will save much time and trouble." To be inserted just above the last line in this rule.

## SUPERINTENDENTS.

Rule 73, insert the words "and see" between the words "departments" and "that all" in second line of said rule.

Rule 74, the word "judges" to be substituted for "committeemen" in first line, and the words "by noon of today" designated in by-laws, article 37, be stricken out.

Rule 76, the word association be substituted for exhibition in third line.

Rule 86, the word "committee" to be stricken out and "entry books" substituted in third line. Strike all subsequent to "full reports" in fifth

line. Strike out fourth and fifth clauses. In seventh clause strike out the words "two judges" and make "three judges," striking out the words "and umpire." In eighth clause substitute the word "judges" for "committee."

CLASS "O"—COUNTY COLLECTIVE EXHIBITS.

Strike out first paragraph page 63:

Lot 1, pro rata premium .....\$2,500 00

Exhibits in this class limited to county agricultural societies exhibiting in the name of the society; providing that in counties in which there are no organized agricultural societies, one or more individuals may compete in the name of the county.

That mature corn of the previous year's growth may be used in making an exhibit in this class.

All exhibits of grasses and sheaf grains not of the present year's growth will be excluded from competition.

No exhibit shall be allowed to compete that covers less than 40 feet in table or shelf space and 10 by 40 feet of wall space, to the satisfaction of the superintendent of this class.

Should an exhibitor desire to make any line of exhibits especially strong, he may make duplicate exhibits of the same varieties, but such duplicate exhibits shall not receive credit in the score. Ream Score Card adopted for scoring of county collective exhibits.

All exhibits must be grown in the county exhibiting and be the growth of 1907.

The above concludes the work we have taken up thus far. We can now proceed to discuss the remaining portion of the premium list in this meeting if desired, and the Revision Committee report in full to the Board of Managers later on.

G. W. HERVEY, Chairman.

On motion of Mr. C. H. Rudge, seconded by Mr. H. L. Cook, the price of \$3 for horse stalls, as recommended by the Revision Committee, was changed by vote of the meeting to \$2 for all horse stalls, including speed stalls.

Mr. O. P. Hendershot: I rise to object. I think that cattle stalls at \$1 are cheaper than horse stalls at \$2, and think that \$1 for each animal will bring us a good revenue, and by charging \$1 for each animal we could let calves go in free. I believe the chairman of the Revision Committee indicated a charge of \$2 for double stalls and \$1 for single stalls.

Mr. Rudge: I think the stalls are all double stalls, so that if you put all double stalls at \$2 and an exhibitor puts one animal in a \$2 stall, there are practically no single stalls.

Mr. Haws: Do I understand Mr. Hendershot's first proposition was \$1 per head, big and little? If that is the case, that does away with the single and double stalls altogether.

Mr. Leonard: If you charge by the head for these cattle and not

designate what are to go in the stalls, then they will come with eight or ten and take eight or ten stalls. Whenever you attempt to make the charge by the head, every one is going to have as much as he can possibly secure. I think the proper way is to charge so much per stall.

Mr. Dinsmore: If your committee will amend their report so as to make a charge of \$1 for every four feet of space and \$2 for eight feet of space, then you have got it.

Mr. Cook: We are going to get into trouble if we go to describing metes and bounds. I move you that the amount of this stall rent be made \$2 for double stalls and \$1 for single stalls. The motion being put to vote was carried.

Mr. Leonard: Will the superintendents for these departments be appointed February 1? There is now nobody of whom to secure stalls until these superintendents are appointed. If these were, there would be a demand for stalls and pens at once.

Mr. Hervey: We want to appoint superintendents at the earliest possible time that we can consider applications for stalls.

Mr. Leonard: I would move that February 1 be stricken out.

Mr. Mickey: I move we change the date to "as soon as superintendents are appointed."

Mr. Ollis: I believe the custom has been heretofore to appoint the superintendents at the first meeting of the Board of Managers and to begin accepting applications for stock pens at that time, but there is no way for the public to know just when that will be. I make a motion that the date be set for March 1; that the wording be changed to March 1.

Mr. Taylor: It would seem to me that applicants would naturally address the Secretary, so that the Secretary might get these applications any time and notify the parties as soon as superintendents were appointed. We cannot return applications and say, "No, we will have to wait till March 1." It must be before a certain time before the first day of the fair.

Mr. Youngers: I wish to say that there will be no trouble on the part of our Secretary concerning applications. Are you ready for the question on the motion made to change the date to March 1 when applications will be acted upon by superintendents of live stock departments?

Mr. Russell: At the Nebraska state fair we never know when the superintendent is going to be appointed and when we can secure pens, and I wish to say that I am in favor of changing the date of these appointments prior to March 10.

Mr. Ollis: If we change to before March 10, February would be better.

Mr. Dinsmore: Some of the exhibitors in the swine department have complained that they cannot find out regarding the assignment of stalls and pens as early as they would like to. At other state fairs the superintendent goes round and takes the application for space at that time for the next year.

Mr. Russell: I will state that in Iowa this is not the case; all the

pens used by an exhibitor this year are held for him until August 1 of next year. At Illinois, I was told, the first fellow gets them. They go three and four weeks before the time with their hogs.

Mr. Leonard: At Illinois the first fellow there is the first fellow certain of his pens; they assign none until the man is on the ground. In Iowa it is just as Mr. Russell says.

Mr. Dinsmore: Some of the exhibitors have expressed a desire that some arrangement be made whereby they could be sure that they could receive the same location and feel entitled to that on account of coming here for years.

Mr. Youngers: Mr. Leonard's motion was to strike out February 1. Are you ready for the question?

On vote the motion was lost, and February 1 remains.

Mr. Leonard: Can we go back to that paragraph in regard to assigning barns? There ought to be some plan formulated whereby we will know who these superintendents are by February 1.

Mr. Mellor: As soon as the appointments are made the press will publish the list quite generally.

Mr. Leonard: The former superintendents will act until their successors are appointed.

Mr. Hervey (Rereads): "At any time after February 1."

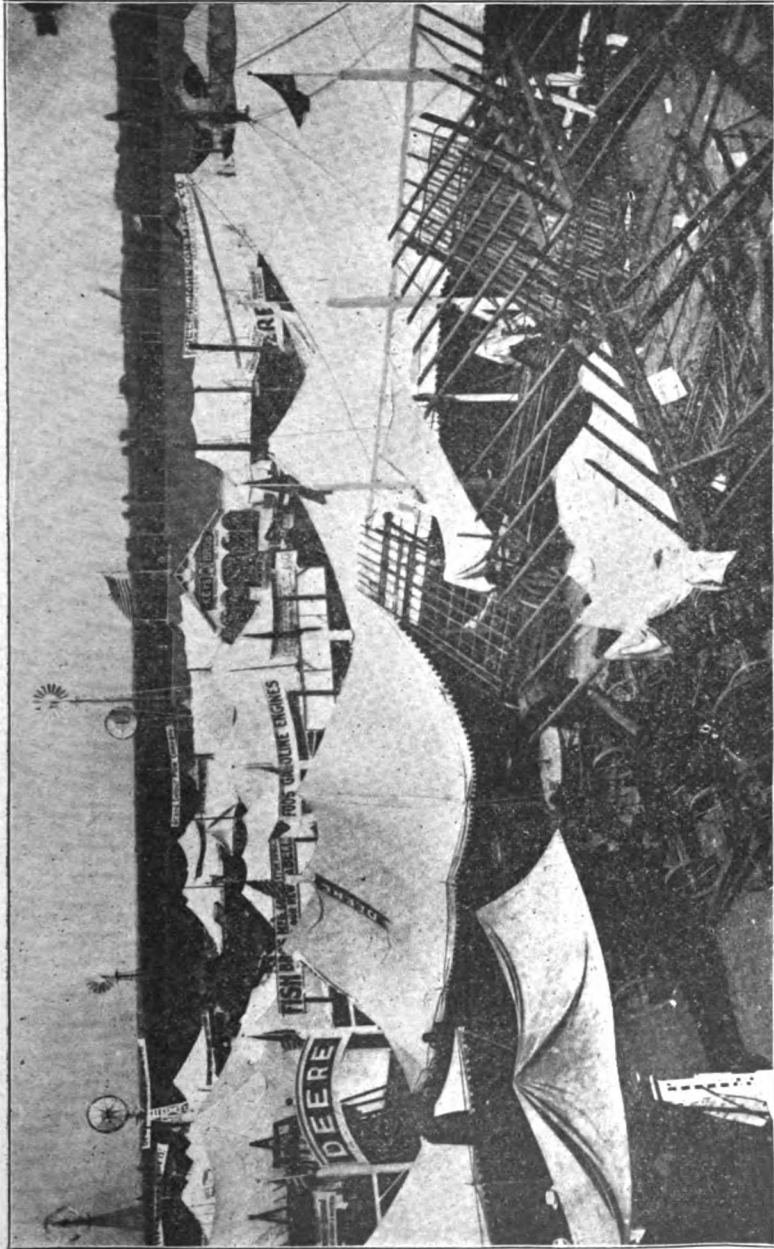
Mr. Roberts: I think it would be a good idea for this body or the Board of Managers to set a date prior to February 1. The chairman of the Board of Managers can call a meeting to decide that question and will undoubtedly endeavor to comply with the wishes of this body.

Mr. Cook: Before Mr. Hervey proceeds any further with this ticket system proposition, while I agree with you that this rests properly with the Board of Managers, yet there is one proposition that ought to come before this meeting and that is the great demand there seems to be, especially in Lincoln among the patrons of the fair, for a coupon ticket good for the week at a reduced rate. It seems to me that their demand for this ticket has some virtue; that where a person has five or six in his family and all desire to attend the fair during the week, that they might have some concession. All other kindred associations do that and it might be well for this meeting to give some instruction along that line.

President Youngers: The Board of Managers will look after that.

Mr. Hervey: If we would strictly carry out rule 89, it would require cattle exhibitors to bring a car load of cattle. If they showed in a single classification, they could not use these animals again. The rule is not applicable and we have taken that out.

Mr. Hervey: We have practically passed on the horse classification, so we need not take that up. We have some recommendations before us on the cattle premiums, and that we adjust the premiums on page 28 in cattle and that the first premium shall be reduced to \$8 and that this first premium run clear down through the whole classification, and the others \$6, \$4, \$3, \$2, etc., making uniform premiums. We would increase



A VIEW IN MACHINERY DEPARTMENT, 1906 STATE FAIR.



this about \$1,300. The committee could not agree exactly on making such a big advance in the premiums. We like the proposition, but the question is, can we afford to do it?

Mr. Ollis: Is the premium the same on heifer and bull calf on all those; that is, forty-eight are made \$8, \$6, \$3, \$2, \$1. Making twelve premiums of \$8, making the whole list straight down regardless of age.

President Youngers: Is that your recommendation?

Mr. Hervey: It comes before this committee and we are unable to agree on the advance which it will make in the premium list. I think it is more than we are able to pay.

Mr. Hervey: We have agreed to add \$367.50 under the rules and regulations governing the poultry exhibit.

Mr. Dinsmore: I move that the report of the Revision Committee, with the exception of live stock, be approved and the committee be continued at their work and report to the Board of Managers for their approval.

Mr. Lewelling: I would like that this body hear a reading of the rules and regulations that we have arranged for this poultry department.

Mr. Haws: (Rises to speak.)

Mr. Lewelling: I have the floor now and wish to speak on matters pertaining to this department until a motion cuts me off. It is important to the poultry interests of this state and to the people of other states, and for that reason I do not want this motion to prevail until this matter can come before the State Board of Agriculture.

Mr. Rudge: I suggest that Mr. Dinsmore withdraw his motion until we hear Mr. Lewelling on these rules.

Mr. Dinsmore: I will cheerfully withdraw my motion if desired.

Mr. Youngers: The motion is suspended, that is, until Mr. Lewelling reads the rules.

Mr. Lewelling reads rules and discusses at length various matters pertaining to poultry exhibit at the coming 1907 state fair.

President Youngers: Will Mr. Dinsmore please state the motion again?

Mr. Dinsmore: I will restate that I move the adoption of the report of the Revision Committee with the exception of that part in relation to live stock, and that the committee be continued in their work and report to the Board of Managers for their approval.

Mr. Mellor: There is no report here on the recommendations of the various officers. If this motion carries, it takes out of the hands of this committee the county collective exhibits, Class "O." All the balance of the report should be left to the incoming Board of Managers.

Mr. Dinsmore: I will except as to Class "O."

President Youngers: All in favor of Mr. Dinsmore's motion will so signify.

The motion was carried.

Mr. Hervey: We have continued our report up to Class "O," and so

far as that is concerned we understand that a recommendation is to be made for a supposed improvement in the method of handling Class "O," county collective exhibits. Now we are ready for recommendations or suggestions that will help us to solve this problem, and in my estimation it is one of the most important outside of the live stock classes. It is a question if it is not the most important in our entire premium list, from the fact that the state of Nebraska today is renowned for making the finest agricultural exhibit in the United States. Not a state in the Union is making the progress in this respect that Nebraska is, and much of this is due to the fact of making such attractive county collective exhibits. Iowa makes an offer that gets about eight counties; that is all they had this year. This is one reason now that the Premium List Committee are very anxious for this meeting to hear the various propositions on county collective exhibits. We are not tied down or married to these propositions; we are perfectly willing to make a change, but we want you men to decide what the better plan is.

Chas. Mann: We who exhibit from the western end of the state think it unfair to compete against exhibits from the eastern part. We come down year after year, but on account of our altitude we cannot hope to successfully compete with counties along the Missouri river, and what we want is to agree on some plan that would be just as between all sections. I think that the reason our scores were so low at the past fair was because of the new score card.

Mr. Mellor: The only difference between the score card used the past year from those used other years was in the fact that it provided for the jotting down of details, such as good, medium, taste, features, etc. I had this score card arranged from the suggestions made by Mr. J. D. Ream, who said that in former years the judges were compelled to go back to exhibits already passed upon time after time for comparison.

Mr. J. A. Ollis: I would suggest that we call the score card the "Ream Score Card."

Mr. Hervey, chairman of Revision Committee, approved the suggestion, and it was decided that the new score card arranged by J. D. Ream, of Broken Bow, be used in the scoring of county collective exhibits and that it be called the "Ream Score Card," and the same was adopted.

Mr. O. P. Hendershot: In regard to exhibits in Class "O" being the growth of the present year, would it not be well to say except for decorative purposes? You will find these people have been coming here year after year with the same old exhibit of sheaf grains and grasses.

M. B. Atkins: This should be left out entirely in every way, shape and form: the same identical bundles come back year after year. Let every man gather and prepare new bundles and after the fair turn it over to the superintendent and let it go.

Mr. Taylor: In regard to the sheaf grain, there is a party, whom probably you all know, who has for the past ten years been bringing the

same bundles; and then there have been the same exhibits of grasses, covering the same old boards, which exhibits have consisted of about 125 different varieties, which would not take much time over a period of two months to gather. I would not object to their bringing it back for decorative purposes.

G. W. Hervey: Reads paragraph regarding competition by Lancaster county.

Mr. Taylor: Why do you make any discrimination at all?

Mr. Hervey: Lancaster county is right here at the fair grounds and other counties 300 miles or 350 miles away have to commence work by loading up on the 26th of the month in order to get here, while Lancaster county comes right in with its vegetables and produce pulled right up out of the ground the morning of the fair and the others make a sorry looking sight beside it.

Mr. Keedle: In order to get it before this body, why not consider the propriety of allowing Lancaster county to exhibit. I think such a recommendation has been made.

Mr. Hervey: We are apprised of the fact that there is a recommendation that came in the report of the Secretary yesterday. We want the best of the two, but perhaps a combination of the two will be better—we want the best.

President Youngers: If there are no objections we will call for the report of the Committee on Recommendations of Officers.

Mr. Arnold: The matter was presented to us for action; we did what we thought was best, but now, if there is a better way before this house, we want to adopt it.

#### REPORT OF COMMITTEE ON RECOMMENDATIONS.

*To the Officers and Members of the Nebraska State Board of Agriculture:*

We, the undersigned, members of the Committee on Recommendations of the Officers' Reports, beg leave to report as follows:

Regarding the report of Chairman Rudge of the Board of Managers, we find that the sum of \$1,109 was set aside in a permanent fund on account of an order being passed that a reserve fund of 10 per cent of the amount on hand should be created. We now find that the amount necessary to be set aside out of the funds on hand at the present time is \$3,529.

We recommend the erection of closets and sinking of buildings as suggested, and that all the balance of recommendations in said report shall be left to the incoming Board of Managers.

We recommend that all recommendations made by the President be left for action to the incoming Board.

In relation to the recommendations of the Secretary, we recommend a division of the state on basis of population as suggested, and that the said divisions must score as follows: First division, that Douglas and Lancaster counties must score 90 per cent. of the highest score made;

second division must score 75 per cent. of the highest score made; third division must score 60 per cent. of the highest score made; and the fourth division must score 50 per cent. of the highest score made in order to entitle each to participate in the money.

We further recommend that the awards be in the amounts as suggested. Also, that car fare be paid for two persons with each exhibit participating in the premium money.

We recommend that the President appoint a premium revision committee previous to the annual fair, which said committee shall hold an open office on the fair grounds during the last three days of the fair.

Respectfully submitted,

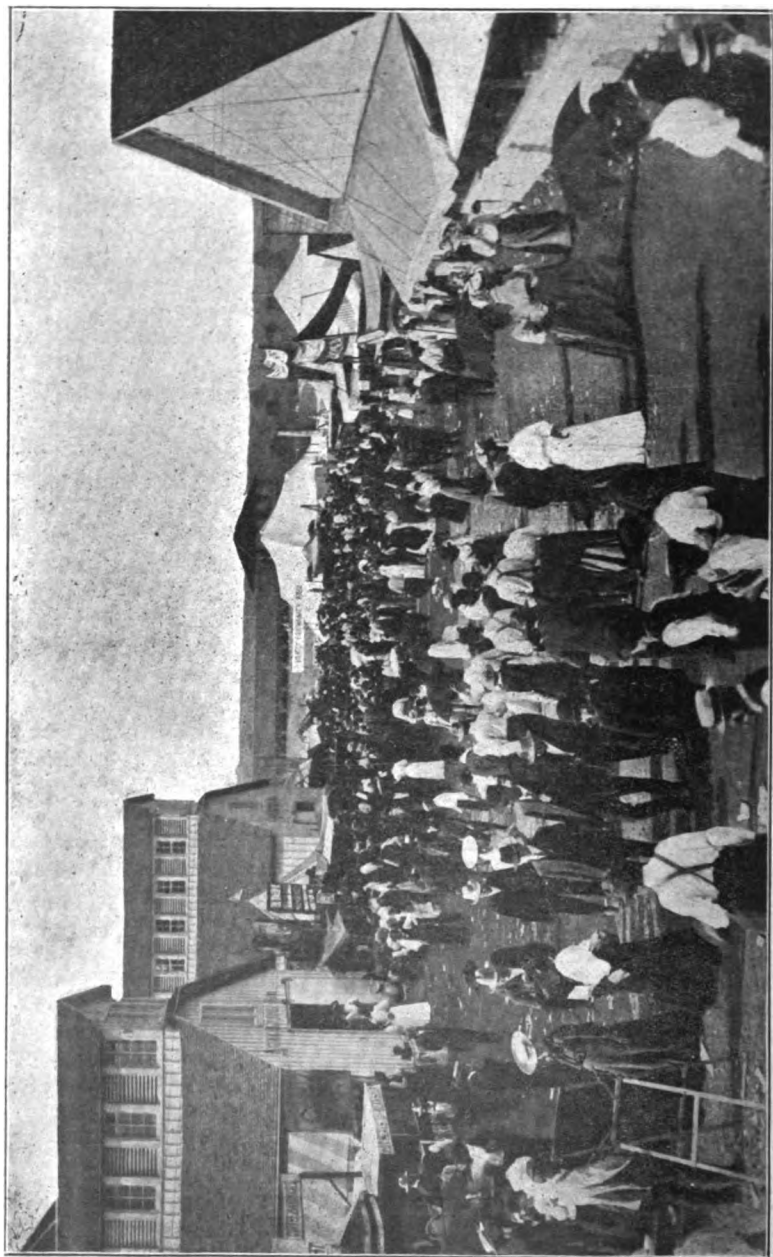
V. ARNOLD.

P. H. BARRY.

CHAS. MANN.

Secretary Mellor: As I was the one that made the recommendation I would just like to say that the total amount offered by the Committee on Revision of Premium List has been raised from \$2,000 to \$2,500. Last year we offered \$2,000 and paid \$2,773. Had the mode of awarding premiums quoted on the score card as to prorating the premiums been followed last year the first premium would have been \$128 and the lowest premium \$9. Last year we failed to get transportation over one of the railroads, and therefore the Board of Managers thought it would be better to pay the transportation of two people that came over that particular road. No doubt this year that same concession will be looked after by some of the exhibitors, as the transportation, probably, will be stopped over every road in the state. My first proposition was to make Douglas and Lancaster counties one division. I did not take into consideration that Lancaster county would have a fresher exhibit, because we know that there is no better exhibit than that of Douglas county. The twenty-one counties that would comprise the second division would be those having 13,000 people within their borders in 1900; about twenty-five counties would be in the third division that goes between 8,000 and 13,000, and those having a population below 8,000 takes in most of the western counties. I suggested that \$200 be given for first premium and \$125 for second. That all other exhibits scoring above the required number be entitled to \$100; and further, that a sweepstakes of \$100 be given to the exhibit scoring the highest, \$50 to the second, \$30 to the third, and \$20 to the fourth, without regard to the classification from which they came. That would make it possible for the best exhibit to take away a total award of \$300.

In regard to this prorata proposition that the revision committee have submitted. Personally I think it would have a tendency to lower the merit of our county collective exhibits. There are men who would think they could come down here with a wheelbarrow load of pumpkins, beets and a few other vegetables and secure their transportation and expenses out of it. I will cite an instance which has come under my observation



ON THE MIDWAY.

in the past: A party out in the state sent in word to the Secretary for a car in which to ship his exhibit, and also for transportation for four people to accompany the exhibit. The request was complied with and when the exhibit arrived it could have been wheeled entirely upon one wheelbarrow at one load. If this suggested plan is adopted, what is to prevent an exhibit of twenty sugar beets covering an entire shelf? I prefer that we adopt a plan which will prove an incentive for the exhibitor who honestly makes an effort to present a meritorious exhibit. On this plan which I have suggested, Lancaster and Douglas counties must score 90 per cent. of the total score made by the best exhibit in order to participate in the money. If the best score made was 1,200 points, they would have to secure 1,080, or fail to get within the money. The second classification would have to score 900, the third 720, and the fourth 600, in order to participate in the premiums offered.

It is true that we have the best exhibits in Nebraska that can be found at any fair in the United States. On our visit to the fairs at Missouri and Illinois we found that they had nothing in comparison, and therefore I am against anything that tends toward lowering the merits of these exhibits in any way, so that those people who honestly desire to come and participate in the premium winnings can come. I hope that if the other plan is adopted that there will be some minimum imposed. How many good exhibits would come if all they could win would be \$128?

H. L. Cook: What is the minimum?

Secretary Mellor: Fifty per cent of the best exhibit. If you are in the fourth district you have to score 50 per cent. and the third district 60 per cent.

W. W. Cole: I would like to ask if the appropriation would be sufficient to pay this?

Secretary Mellor: The amount would be about \$2,700 to pay all the premiums if the number of exhibitors should be equal to the number we had this past year.

Mr. Taylor: I object to that part of the plan relating to the new score card.

Secretary Mellor: The reason for adopting the plan was this: Some years the judges score the exhibits very closely, while in others it seems to have been the custom to score exhibits so that all would get within the money. Heretofore our rule has compelled an exhibitor to score 800 points out of a possible 1,600. In this new plan, if the judges score closely, the best exhibit will suffer alike with those that are poorer and the rule will be flexible instead of iron-clad. It is true that the Board of Managers gave you the money when you scored below 800 points last year, but under the new proposed percentage plan it would make no difference whether they scored closely or not; but in regard to this pro-rata question, that is something that I am against, without there is a minimum amount stated.

Mr. Taylor: In regard to the plan, I certainly would oppose it if the western part of the state must score 50 per cent. with Washington, Douglas and Lancaster counties.

Mr. Mellor: They have always scored more than that in the past.

Mr. Taylor: I know we have always had 1000, 1100 or 1200 until last year, and we had a better exhibit last year than ever, but on the plan of scoring it is impossible for the western counties to compete with the eastern part of the state. I have made some data on this and think we know something about the western part of the state and I know that we cannot compete with you here on the ratio of 50 per cent.

Secretary Mellor: You could on the ration of 100 per cent. heretofore.

Mr. Taylor: I am willing to do that.

Mr. Cole: I would like to request that the state be divided into three divisions, making an eastern, central and western division, and that would do away with parties coming down here with a wagon load as an exhibit.

Mr. Searle: What did these exhibits score last year?

Mr. Mellor: Some scored 1200, some went below 800, others 621 and 566 and lower.

Mr. Searle: Would you not cut out about one-half your counties?

Mr. Mellor: If we followed last year's plan and adhered to rules.

Mr. Hervey: I do not want to take advantage of any proposition that may be made here or argue against it but I think that the Secretary in making his remarks took an undue advantage of our proposition in saying that if our proposition was adopted they would come down here with a few beets in a wheelbarrow. It is an injustice to make a remark that we have made a proposition that does not amount to anything. They cannot bring a worthless exhibit under the method of scoring used last year; they cannot do it at all. It was a matter of judgment with these men formerly; it was in a great many cases at least. I think last year was the only time the exhibits ever were scored. Previously they simply made up the score by going in there and looking over things and making a guess. No system was ever applied in that department until last year. I do not believe in getting into anything else than the same kind of a scheme, getting honest and capable men who will do the work for their reputation. I do not want to interfere with the proposition that has been made here, but it looks to me as though the basis for this division is not on an agricultural basis. There is something in Mr. Cole's proposition, to divide the state into districts so as to give advantage to the climatic conditions, in these particular districts, northern, central and eastern divisions. The greatest corn expert in the United States has formulated this matter so as to work out this proposition for the best interests of the state in Iowa, but we do not have the same climatic conditions that Iowa has. When we get west of here the conditions naturally change from an agricultural into a range condition. On those divisions we have the particular districts cut off on what they consider

a fairly equitable basis. My idea would be to make it that way if we make it at all. But I do not favor a division on a population basis, because it is not according to the accredited population.

O. E. Mickey: It is fifteen minutes of 12 o'clock now and I move you that this be left to the incoming Board of Managers, or a committee.

E. Z. Russell: I second that motion.

Mr. J. A. Ollis, Jr.: I move we appoint a committee consisting of Messrs. Mellor, Hervey and Cole, subject to the approval of the Board of Managers, these three men to make report, if Mr. Mickey will accept this amendment.

Mr. Mickey: I accept the amendment.

President Youngers: You have heard the motion.

Mr. Rudge: Will it be the duty of the Board of Managers to accept this report? Maybe they will not agree with that report.

H. L. Cook: Do we understand that the Board of Managers will have power to act? There is just one thing that has got to be considered in this proposition. The railroad companies will not furnish transportation for men accompanying county collective exhibits this fall and we have got to pay for it. There is no way to get these men down here with these exhibits.

President Youngers: As I understand it, that will undoubtedly be looked after by the Board of Managers.

Mr. Elijah Filley: Mr. President and Chairman.

President Youngers: Mr. Filley.

Mr. Filley: By virtue of the authority vested in me as Vice-President of the Nebraska State Board of Agriculture, I have appointed Mr. C. H. Rudge and Mr. O. E. Mickey as a committee to wait upon Mr. J. B. Dinsmore and present him here before the State Board of Agriculture. [Great applause.]

Mr. Filley: Mr. Dinsmore, the Nebraska State Board of Agriculture realizes the sacrifices that you have made in looking after the interests of this State Board of Agriculture during the thirty years of your life just past and we felt that we one and all could approach you at any and all times. You have filled every position in the gift of the State Board of Agriculture, and whether you were just a member of the State Board or on the Board of Managers or whether you were in the President's chair, you were just the same J. B. Dinsmore, and always ready to help and assist with the state fair for the interests of the great state of Nebraska.—We appreciate those services.

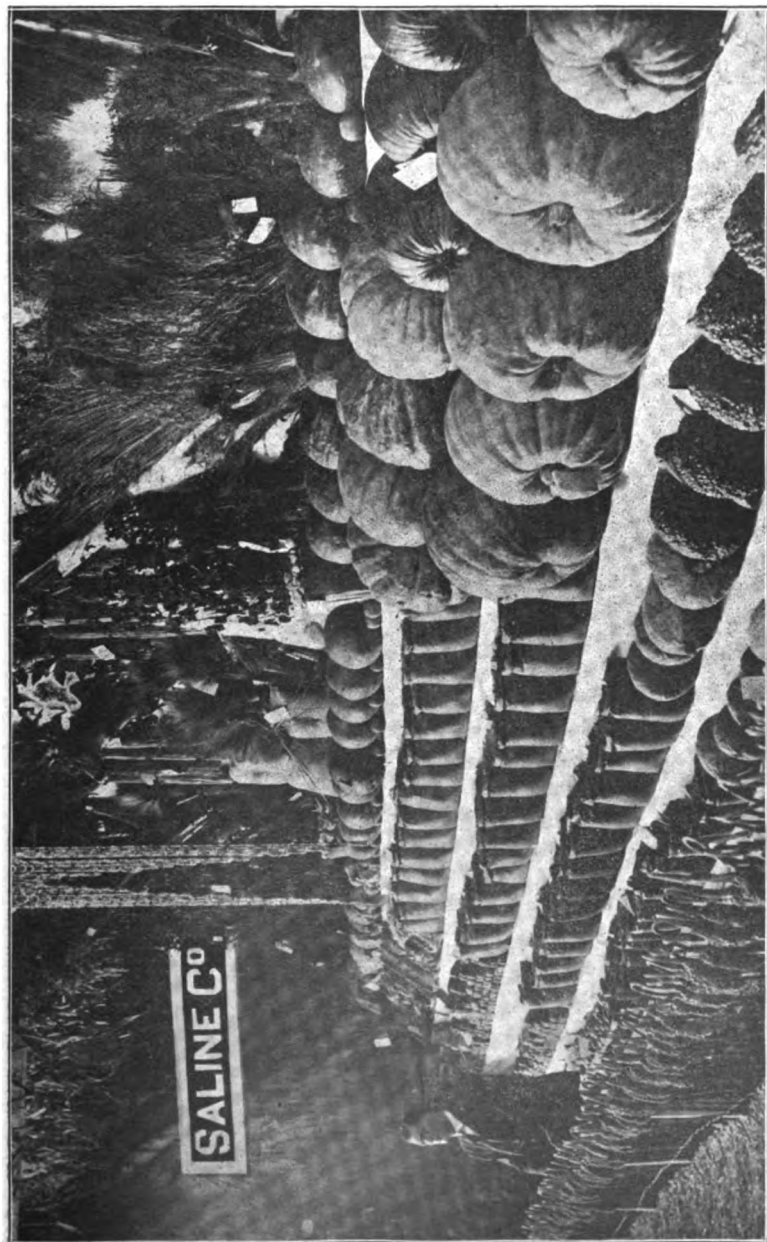
It is said that he who can make two blades of grass grow where only one grew before is a benefactor. Nebraska has made two blades of grass grow every year where only one grew the year before, and I want to say to you that these changes have not been brought about by the man who sits round on dry-goods boxes waiting for something to turn up, but by the man who gets out and turns something up. Many of these changes have been brought about largely by the influences that have gone out



from this State Board of Agriculture, and we are going to keep this good work going on, and now Mr. Dinsmore, as a slight token of the esteem and confidence in which you are held by the members of this association, we present you with this easy chair, and as you rest your weary body, and as your mind may go back over these thirty years of your life, you can rest assured that you have the heartiest sympathy and best wishes of every member of this State Board of Agriculture. [Great applause.]

Mr. J. B. Dinsmore: Mr. Chairman, Mr. Filley, and members of the Nebraska State Board of Agriculture, I have done many mean things in my life—I have done some of them since I became a member of the State Board of Agriculture, but it is the first time I have ever been arrested and brought before the bar of the Board. I wish to thank you one and all for this token of appreciation of the labors and the efforts that have been put forth in behalf of agriculture in this state. From the earliest date of my remembrance I have been interested in agriculture. I was born and brought up on a farm. I came to this western country at a time when there was very little west of the Missouri river except Indians and buffalo. It will be forty-eight years in March since I crossed the Missouri river. At that time there was no settlement in Nebraska as far west as we are at the present time, I think, at least but few. The advancement that has taken place since that time is indeed marvellous. If any one had told me that Nebraska or Kansas would have become agricultural states, I would have doubted his remark. The conditions of the country in the years 1861 to 1864 made it advisable for me to go further east. If you will pardon me for just a personal remark or two, I will give you a reason. It had become a question of whether the sheriff could get more out of my property than I could. I had but little, but I gave it all up—that was honorable, and during these years of my life in Nebraska whatever that was worth while has come to me, not through my own seeking, but through the desire of my friends that I have it. I commenced in this state upon a homestead and gave the best years of my life to building up the agricultural interests of the state. How they have been crowned with success you can judge. All my life—hope while I live will be to see this state advance from an agricultural standpoint to the position which I know she is entitled to and will take, if the men with whom I have been associated on this Board will put their shoulders to the wheel.

I say to you, gentlemen, that I have never seen as good crops according to the work. For the last three years in the western part of the state they have been just as good as in the eastern, and they can make it sure if they adopt methods calculated for agricultural extension in Nebraska. We cannot continue to follow our grandfathers' methods. We must cultivate differently, and to those who live in the eastern part of the state I would say they should accept different methods; that is, cultivate less ground and put the same amount of time and labor on the few acres. Those men who cultivate little pieces of corn, say four, five and six



**FIRST PREMIUM WINNER AT 1906 STATE FAIR.**

acres, can show amazing results from it. Adopt better methods; never stop and be contented with what you are doing today, and by advancing the interests of the state you will at the same time advance your own.

Thanking you, gentlemen, for all the courtesies you have shown me in the past, personally and in a public way, be sure that my sympathies go with you in this work. While I think my services are not worth much to this Board in any way, you can all be assured of my sympathy and friendship. [Great applause.]

Mr. G. W. Hervey: Mr. Chairman, I move you that this association extend to Mr. J. B. Dinsmore a vote of appreciation of his long and faithful work in the State Board of Agriculture for the last thirty years, and that the same be spread upon the records.

Motion seconded by Mr. O. E. Mickey.

On motion of Mr. F. H. Young the vote was taken by rising vote, and carried.

Mr. W. R. Mellor: I move you that all that part of the report accepted and that part regarding the county collective exhibit be accepted and the committee discharged.

Motion carried.

W. R. Mellor introduced the following resolution:

*Resolved*, That we are in favor of such amendments to the present Food Commission law as will provide for the enforcement of all laws relating to food and dairy products, and to the enactment of all laws relating to such products along the same lines and in harmony with the pure food laws enacted by the National Congress.

W. R. MELLOR.  
C. H. RUDGE.  
ELIJAH FILLEY.

Mr. O. P. Hendershot introduced resolutions as follows:

WHEREAS, The educational interests of Nebraska have very largely profited in the past through the furtherance of agricultural education resulting from the federal appropriations for this purpose; and

WHEREAS, The growth in the demand for agricultural education is unprecedented in this state and is making unusual demands upon the public for maintenance; and

WHEREAS, Liberal appropriations made by the Legislature of this state have proved insufficient to meet the needs of our University; and

WHEREAS, We believe that no money appropriated by the federal government gives such generous return in the development of agricultural industries as the money appropriated for education and research: Therefore,

*Resolved*, That we heartily endorse Senate File No. 6680, introduced in the second session of the Fifty-ninth Congress, which looks to the further appropriation of federal funds for the support of industrial education in the land grant colleges now established;

*Resolved*, That the secretary of this association be instructed to send a copy of this resolution to each member of congress from this state, and to further urge in every possible way the passage of this bill.

WHEREAS, The Regents of the University of Nebraska have seen fit to ask for certain appropriations for the benefit of agriculture, to provide for additional buildings at the University farm, and to support the sub-station in the western part of the state, and for the maintenance of farmers' institutes; and

WHEREAS, We believe that the furnishing of necessary buildings and equipment for the School of Agriculture is absolutely necessary to the agricultural progress of the state and will many times repay the outlay by leading to improved practice and the more general intelligence of our agricultural people; and

WHEREAS, The investigations of agricultural practice in the western part of the state and the introduction of improved methods are resulting in great benefit to our farmers; and

WHEREAS, The dissemination of knowledge among the people through the holding of farmers' institutes is one of the most practical methods of distributing the results of investigation in our Experiment Station and advancing the agricultural practice of the people: Therefore, be it

*Resolved*, That the Nebraska State Board of Agriculture, in annual session assembled in connection with Organized Agriculture, believes that this request is not unreasonable upon the public fund, and we respectfully urge upon the Legislature the passage of this bill, in full, without reduction of the amounts requested for any of the purposes named.

After reading of the foregoing resolutions the same were carried and adopted by unanimous vote.

E. Z. Russell: Mr. Chairman, I wish to state that I have been instructed to pay each member here \$6 except those acting on the three committees, who shall be paid \$9, for defraying expense in attendance on this meeting.

Mr. Rudge: I move that we make this to include all members outside of those residing in Lincoln.

Mr. Russell accepted the amendment and the motion as amended was carried.

President Youngers: We will now hear from the Committee on Nominations.

Mr. E. Z. Russell: I would suggest that I could be paying these members while the meeting is going on.

Mr. Youngers: I think you had better wait.

Mr. R. M. Wolcott, of the Committee on Nominations, reported as follows: Those elected to membership for the following year are C. H. Rudge, Wm. James, O. P. Hendershot, O. E. Mickey, John F. McArdle, L. W. Leonard, H. L. Cook, I. W. Haws, W. C. Caley, Elijah Filley, C. M.

Lewelling, J. A. Ollis, Jr., E. M. Searle, Jr., Charles Bessey, and Dr. Pritchard, and moved the adoption of the report. When put to vote the same was carried.

Mr. Rudge: I wish to impress upon the delegates here the importance of the one-eighth mill levy. If we go home and forget about it and don't talk it up with the members of the Legislature it will get lost. If this body of men will make it a business to come here and see the members personally and write letters to their representatives or senators from their particular counties, and not let them forget to talk it up with the other members, but make the most of it, I think it probable that we can secure this much needed appropriation for the improvements on the state fair grounds this coming season.

C. M. Lewelling: I move that we proceed to the election of officers.

Mr. C. H. Rudge seconded the motion.

Mr. Filley: Question. Motion carried.

Mr. R. M. Wolcott: I nominate Mr. Youngers for President.

Mr. H. L. Cook: I move that the rules be suspended and the Secretary be instructed to cast the unanimous vote of the members present for Mr. Youngers.

Motion seconded by Mr. Rudge and carried.

Vice-President Filley and members: Mr. Youngers, Mr. Youngers.

President Youngers: Mr. Chairman, gentlemen and members of the State Board of Agriculture, I thank you for this kind endorsement and I assure you that in the coming year I shall do all in my power to up-build the interests of the Nebraska State Board of Agriculture, and I trust that the coming year of 1907 will be a record-breaker and do not see any reason why it should not be. Again I thank you. [Applause.]

President Youngers takes the chair. Next thing I believe, gentlemen, is the election of First Vice-President.

Mr. G. W. Hervey: I nominate for First Vice-President Mr. C. H. Rudge and move that the rules be suspended and that the unanimous vote of this meeting be cast for Mr. Rudge.

Motion carried and Secretary cast the entire vote for Mr. Rudge as First Vice-President.

Secretary Mellor cast the full vote of the meeting for C. H. Rudge as First Vice-President and he was declared elected.

Mr. Rudge: Mr. Chairman and gentlemen, I wish to say that I appreciate this honor. There was a time when the vice-presidency was looked upon as an empty honor, but I assure you that I do not consider it as such, and I thank you. [Applause.]

Mr. M. B. Atkins: I nominate Mr. Vincent Arnold, of Richardson county, for Second Vice-President, and move the rules be suspended and the Secretary be allowed to cast the entire vote for Mr. Arnold.

Motion carried.

Secretary Mellor cast the unanimous vote of the meeting for Vincent Arnold as Second Vice-President.

Mr. O. E. Mickey: I nominate Mr. E. Z. Russell for Treasurer.

On motion, the Secretary was instructed to cast the unanimous vote of the meeting for E. Z. Russell, of Washington county, as Treasurer, and the election was so made.

Mr. C. H. Rudge: I nominate Mr. W. R. Mellor for Secretary and move you that the rules be suspended and the unanimous vote of the association be cast for Mr. Mellor.

Motion carried, and it was so done.

Mr. Mellor: Gentlemen, I duly appreciate this token of your esteem and I not only hope that we may have the best fair this year, but say that we *will* have it. [Great applause.]

President Youngers: I desire to announce the following Board of Managers for the year 1907: Chairman, C. H. Rudge; Mr. H. L. Cook, Mr. G. W. Hervey, Mr. Elijah Filley and Mr. O. P. Hendershot.

Secretary W. R. Mellor: I move you, gentlemen, that the appointment be concurred in by this State Board of Agriculture. All in favor of the same will signify by saying aye.

Motion carried unanimously.

Mr. Youngers: What is your further pleasure, gentlemen?

Mr. Rudge: I would like to ask the members of the Board of Managers if they would like to have a meeting this evening or state if they desire to have a meeting to-morrow. There are things to be taken up at this time that would necessitate a meeting, and the Premium List Committee can probably get together and make a report. In case they do not get together we would have to call a meeting early sometime in February.

Mr. G. W. Hervey: I would personally favor a meeting to-morrow or to-morrow night or to-morrow afternoon.

Secretary Mellor: I think we should hold a meeting if possible to-morrow. Before we adjourn I wish to announce that Dean Burnett will speak to the members of Organized Agriculture this evening in Memorial Hall on the University Campus, and I also suggest that any who will be able to attend the Glee Club concert on to-morrow evening come forward and receive tickets for same, as those only will be admitted who hold tickets.

Mr. Rudge: I move that we adjourn.

Mr. R. M. Wolcott seconded motion and same carried.

Adjourned.

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#### FOURTH SESSION.

This session was presided over by Regent W. G. Whitmore, in the absence of Chancellor Andrews, who introduced as speaker of the evening, Dean E. A. Burnett of the Agricultural Experimental Station.

## THE UNIVERSITY AND AGRICULTURAL PROGRESS.

BY DEAN E. A. BURNETT.

(Delivered before Organized Agriculture, January, 1907.)

Mr. Chairman and Friends: The meetings of Organized Agriculture are the milestones which mark the progress of the agricultural industries in this fruitful state. Scarcely a half dozen years have passed since the various societies interested have been associated in this organized movement. Yet, within this time the growth of our agricultural wealth and the value of our annual farm products have more than doubled; our lands have increased in value from twenty to fifty per cent. and in many cases more than one hundred per cent. The accomplishment of such great results speaks forcibly for the energy and ability of the men who have been leaders in this forward movement and who have carried the gospel of good farming to the uttermost parts of our commonwealth, quickening the interest of people not before appreciative, and strengthening the knowledge and faith of those who before had benefited by their superior skill and business ability. Such progress also speaks volumes for the native richness and fertility of our soils, a heritage which has come to us from the Creator and which it is our duty not to impoverish but to transmit to our children unimpaired, or with increased fertility and productive power.

The progress of this generation has taught the farmer, the merchant, the banker, and the business man in whatever line, that agriculture as an industry must be developed upon business principles, and that our prosperity demands, not alone that a few men in a township or a county be skilled farmers, but that every man and woman who lives upon the land shall be intelligent and skillful in his particular vocation.

It might be pertinent at this time to discuss some of the foundation principles which in a large way must be understood if we would continue the progress of the last decade and build a substantial agriculture in the state. The increase in agricultural values, which is one of the chief sources of the farmer's prosperity, has imposed upon him the necessity of securing a higher earning power from the land. We may consider this principle as fundamental, in value, if not in tonnage, the production of the land must increase as the price of land increases. No satisfactory solution of this increased production will be reached which does not recognize the necessity of raising larger crops upon each individual acre of land. The average crop does not pay the cost of production, unless you figure the labor at a very low price. It is the large crop which pays the profit and which furnishes an indication of the degree to which advanced methods are practiced.

Quoting from Mr. J. J. Hill in his famous address at the last Minnesota state fair, "The life sustaining power of the soil is lowered in two ways: first, by physical destruction through the carrying away of earth

to the sea, and second, chemically through the withdrawal of elements required for plant life. The former course has ruined millions of acres of the older and rougher agricultural sections in New England and the southern states. The latter is today by far the more serious cause of soil depletion. We deliberately rob the soil of the elements of fertility with little heed of what the ultimate effect will be on subsequent production."

It is well known that a single-crop system finally ruins the land, depleting it of certain elements of fertility and introducing plant or insect pests which reduce its production below the point of profit. It is a soil robbing process. Where the deteriorating influence is only partial, a change of methods, introducing a rotation of crops, applying manure to the soil, or seeding the land down to grass, immediately increases production. Has the fertility increased or decreased on your farm during the last ten years? If the average production has decreased, then surely some change must be made in the system of cropping or eventual ruin of the land and impoverishment of the owner will follow. There are thousands of deserted farms in the Eastern and Southern states which were once fertile and productive. From a lack of knowledge of the fundamental principles of farming, the owner has been forced into other vocations, dispossessed and disinherited by the land. Who shall say that the same was not often true of the pioneer on these Western prairies, who, ignorant of the conditions, plowed and sowed and reaped not, dispossessed and disinherited by a land which today is being occupied and made fruitful? In every community represented here tonight are men and women who are being disinherited in a land of plenty because of their lack of knowledge and ability to cope with present-day conditions. This question is not one of individual importance alone, it is a great public question,—whether communities shall prosper and year by year accumulate the fruits of their industry; or whether they shall cling to obsolete methods, shall draw constantly on the soil and return nothing, until by these methods they are themselves impoverished and disinherited by the land.

The work of the Nebraska Experiment Station in the study of crop rotations bears substantial evidence of increased yields under all rotations where a variety of crops is raised. The variation in the crop, the alternating of corn and small grains, the application of moderate dressings of manure, seeding the land down to grass for two or three years, have all tended to increase the yield. A variety of rotations has been used, combined with good tillage and the selection of large yielding varieties of seed. Under this treatment the average yield of leading varieties of corn, wheat, and oats has been to practically double the average yields of the state, e. g., the average yield of Turkish Red wheat for the five years 1902 to 1906 inclusive was 35.3 bushels per acre while the average for the state was but 18.8 bushels. Five-year averages of Hogue's Yellow Dent corn have yielded 74 bushels with many higher yields, while the average



of the state for the same time, for all varieties, is 31 bushels, the station farm producing two and one-third times the average of the state.

The difference between the production of the average farm, and of land which has been handled by more approved methods, speaks the importance to our people of learning a better way. Our own prosperity demands that we husband the resources of the soil. We can best do this by a study of the soil and the manner and extent to which the various crops exhaust its fertility. The very great advantage of this knowledge is immediately shown in greater profits on the land and more interest in farm occupations. A general and positive demand has come from the rural classes to learn these better and more profitable methods.

#### THE EXPERIMENT STATION.

This interest in the best way, and a desire to know how, has led to a great and increasing demand upon the agricultural departments of the University. Standing as the exponent of improved methods, the University is continually called upon for advice as to the management of land, the rotation of crops, the methods of tillage to be pursued, the variety of crops to be grown, the planting and care of fruit and ornamental trees, the growing of windbreaks to shelter feed lots and farmsteads, the improvement of breeds of live stock, the compounding of rations, the care and feeding of dairy cows and the handling of milk, the control of plant and animal disease, etc., etc. Does anything all the fruit tree, the farm crop, the animal on the range or in the feed lot? The Experiment Station is importuned for advice and assistance, and aid is confidently expected, because such aid has frequently been rendered to the very great advantage of the agriculture of the state.

Since the establishment of the Experiment Station, the attention of its workers has been directed toward the solving of practical questions which affect directly the profits of the farmer in the operation of land. Many subjects under investigation have, of course, not been productive of results, and in other instances the cause of the adverse condition or disease has been determined without the ability as yet to suggest a remedy. On the other hand, many questions investigated by the station have resulted in great assistance to the farmer. The Experiment Station has furnished the basis for much of the improvement in agricultural practice in this state.

Winter wheat production in Nebraska has been extended 10,000,000 bushels annually, and today is being pushed throughout the dry country to the boundaries of the state.

Brome grass has been introduced and distributed over all the state. The growth of alfalfa has been greatly extended by the work of the station and the farmers' institute.

The Kherson oat introduced by this station is becoming the leading variety, outyielding ordinary varieties by ten bushels per acre in eastern Nebraska and doubling their yield in western sections.

The improvement of corn inaugurated by this station is worth \$10,000,000 annually to our farmers.

The financial gain to the state resulting from the work of the station on these four crops would support the University, the School of Agriculture, and the Experiment Station ten times over. Yet this is not all. Experiments in the feeding of cattle have shown conclusively that a proper balance of nutrients in the food is necessary to secure the cheapest production of beef, and that this balance of nutrients may be secured from two of our most common crops, viz., from corn and alfalfa hay. The difference between the use of alfalfa and prairie hay, with corn, means a difference in the profits to the feeders of Nebraska of more than \$1,000,000 annually, or more than twice the sum appropriated for the support of the University. Not only so, but the raising of a million tons of alfalfa upon the corn lands of the state to furnish this food material, would increase the fertility of the land and result in a profit over that now realized,—enough to maintain our entire University.

The station has demonstrated that the cost of butter can be reduced twenty per cent in eastern Nebraska by the use of the silo. We produce four million dollars worth of butter and dairy products. The instruction of the School of Agriculture, put in practice on the dairy farms of the state would support the School of Agriculture and erect the buildings asked, out of the profits which might thus be derived from the dairy business. The difference in profit between good care and ordinary care of the dairy cows of the state would support the agricultural work in the University. But how shall this progress be made, unless the School of Agriculture shall send its students to preach the gospel of better dairy methods among all the people?

This station has demonstrated that apple scab can be controlled by spraying with the Bordeaux mixture. Extensive spraying demonstrations carried on during the last summer have showed that the spraying of orchards is practical and profitable.

#### THE SUBSTATION.

To solve some of the problems of the drier sections of the state and aid in the development of the country, a western station was established. Provision has been made for a careful study of the effect of various methods of tillage and of farm rotations. Introduced grains and grasses will be tried in larger numbers and the best will be distributed. Exact records are being secured in wintering cattle, using only those foods which can be produced in the country. The grazing lands will be studied to increase their carrying capacity, and forage will be grown for winter use.

No lesson so much needs to be taught in the semi-arid country as that tillage will conserve moisture, that this moisture must be stored before the drought begins, and that the production of crops should not be left to the accident of seasonable rains.



LIVE STOCK PARADE, 1906 STATE FAIR.

At the substation, the durum wheats have produced more than double the yields of the local spring variety. In 1906, Velvet Don wheat yielded 23.4 bushels, while the local spring variety yielded 10.6 bushels; winter wheat on <sup>the</sup> summer tilled land produced 425 bushels on a ten-acre field—a local field in the neighborhood made 15 bushels per acre. Kherson oats have produced from 30 to 52 bushels per acre, yielding 47 bushels in 1906, while local oats produced 24 bushels under like conditions.

Alfalfa has been grown both on the bench and on the high tableland. Land has been seeded to grass without difficulty in a country where such seeding was thought to be impossible. The extension of alfalfa upon the high table lands is a milestone in the development of western agriculture.

The facts above noted regarding the western station barely suggest the lines along which development will come. The results already achieved have paid back to the state much more than the money appropriated for this work. Kherson oats, winter wheat, the durum wheats, have been widely distributed, and each new section to which seed has been sent has become a center for further distribution. The western station not only must do experimental work, but must demonstrate that the methods in practice can be used upon ordinary farms. The example of what good farming means, in a country where good methods are uncommon, encourages farmers to better practices. Progress is made slowly but the people do not go back to inferior methods.

But the operation of this plant requires money; and appropriations have been asked for this purpose. It should be understood that this plant is not an ordinary farm, where a few crops are grown in large areas at a profit, but that technical methods and high-priced men are necessary to get accurate results and control their publication. True, there should be a profit in some cases, but if the experiment is valuable, it is fair to presume that much work has been done at a loss. The question of producing revenue should be entirely secondary to that of securing results useful to the people. These results will be measured by the means available for the work.

Twenty-five thousand dollars has been asked for maintenance and improvements at the substation for the next biennium. Nearly half of this sum is necessary for improvements required to conduct this experimental work. The amount asked is the minimum that will permit good work in the lines under investigation. If the amount is cut, then the work must be confined to narrower lines and some of the work started must be dropped, for poor work is not to be considered.

#### AGRICULTURAL EDUCATION.

The vocation of farming requires that the farmer be a man of broad education. It necessitates a knowledge of the scientific principles of the soil, the plant, and the animal, and requires a knowledge of business principles. "Neither can he afford to be ignorant of the economic and sociological phases of the farm problem, for this question has come to be

greater than simply the raising of large crops and selling them for a good price upon the market. While it may be true that the success of any individual farmer may depend upon his business sense and his technical knowledge, it is folly to hope that the success of agriculture as an industry and the influence of farmers as a class can be based solely upon the revenues from this land. General intelligence, appreciation of the trend of economic and social forces, capacity to co-operate, ability to voice his needs and his rights, are just as vital acquirements for the farmer as knowing how to make two blades of grass grow where one grew before." This feeling of interdependence between man and man makes up the community life. It becomes the inspiration and the initial force behind every community movement. It builds the churches and schoolhouses. It organizes the farmers' clubs. It maintains young people's associations. It makes the public sentiment of the community.

If the country is to be a power in directing the civic life and solving the social problems of this generation, then the people who make up the country must be as intelligent, as resourceful, and as fully alive to its vital problems as the men who make up the towns and cities. If the country has looked to the towns for its leaders in public movements, if it is still looking in this direction, this is proof of the need for a broader education of the men who are to make up the life of the country. It is here that the University as a whole has stamped its influence indelibly upon the life of the state. It has educated and sent back to the town, the hamlet, and the farm, young men and women filled with zeal and ambition to extend the advantages of education among the people. These young men and women are found in the schoolroom, in the workshop, and on the farm, and always they are taking the initiative in the movements for broadened education, for the more efficient application of labor, and for a more helpful community life.

Agricultural education is today the most potent factor in agricultural progress. It has given an impulse to economic production which has never before been equalled and the benefits of its increasing technical knowledge are felt on every farm where intelligent methods are practiced and where modern ideas are applied to the farm question. Mr. J. J. Hill, before mentioned, has proposed to establish an experimental farm in every county as an aid to agricultural progress. I submit as the most feasible substitute that the state should offer the very best instruction in agriculture which it is possible to give, and should send back to each county, not one but many young men and women qualified to put into practice scientific and practical farm methods. Then every community will feel the stimulus of this broader intellectual life, and the schools organized for the promotion of technical education will be more and more appreciated.

If preaching the gospel of good seed can increase the yield of corn by millions of bushels yearly, if a study of varieties of crops and of methods of tillage will add new crops to our western sections, and in-

crease the profit of all land, the men who can demonstrate these things among the people are of great value to a community. If better methods of feeding are put in practice as the result of their efforts, adding millions to the annual profits of the cattle feeding business, how can we measure the value to the community of a progressive farmer who understands these principles and has the means at hand to put them into operation? That the University has influenced and is influencing farm practice in all these ways is acknowledged by farmers in every section of the state. Then, surely, the students of this institution who go back to the farm to practice the knowledge they have acquired are worth to the state many times the cost of their education.

But how shall these young men be educated unless there is a school with laboratories in which to work, and teachers qualified to teach, and equipment sufficient for its use? All these are needed today more seriously than at any previous time since the establishment of the School of Agriculture. The farmers' sons have heard of the practical work of the school. They have filled its buildings to overflowing and have crowded its class rooms to the outer doors. We are asking that more laboratories be built and more teachers be furnished to give this instruction. Unless this is done, the school cannot grow, and agriculture in the University will languish because of lack of support.

There are at the present time but two classrooms at the University farm which will hold the entire classes of the regular course. These are the assembly room in Agricultural Hall and the stock judging pavilion in the dairy barn. There is but one room at the farm adequate to hold the winter course students in one section. There are not teachers sufficient to divide these classes into sections without working the teachers day and night for seven days of the week. Already some of our instructors teach twenty hours per week, and no teacher can do good work under lecture and laboratory methods of instruction and carry any increase of hours. Yet more, the men who are carrying this burden of work are supposed to devote considerable time to experimental work, in their leisure hours, for which service they are paid from government funds which cannot be applied to instruction.

It lies with you as taxpayers to say whether the Legislature shall grant these requests or not, for there is no man in the Legislature who will not heartily support these measures if he is convinced of the public need and assured of the approval of his act, by the people whom he represents. On the other hand, if his constituents are slow to appreciate these needs and criticise his judgment on these public questions, he will be slow to support measures which mean an expenditure of the public moneys. If, therefore, you believe in this movement, it is your duty not only to assure your representatives of the wisdom of providing buildings and facilities for this work, but it devolves upon you to mold the public sentiment which will support a wise and liberal policy toward the University.

Money has been asked to complete the Woman's Building, provision for which was partially made two years ago. This is needed in order that the farmers' daughters may have the same opportunity for education in practical household affairs as are now enjoyed by the farmers' sons in agriculture. A practical education in the arts of gardening, floriculture, poultry culture, and home economics, will be as useful to the women of the farm, as the courses now offered to boys are useful to increase the profits from the land. If the household on the farm could be relieved of some of its drudgery, if the home could be made more attractive and the farmsteads more beautiful, a great forward step would be taken in developing a love of the country and a desire to live on the land. These conditions will never be fully realized until the women of the farm are as well educated in household arts as the men of the farm are educated in the art of farming. The building we are asking you to complete will offer an opportunity for the study of household art in its broader sense as applied to the life of the country. Before another Legislature meets, every room in this building will be filled with young women.

#### HORTICULTURE.

In order that the interests of horticulture may be cared for in a manner fitting the needs of this important industry, we are asking for money to construct a Horticultural Hall.

The western idea of farming is to own large tracts of land, operating on an extensive scale. With the rise in values incident to the development of the country, young men are discouraged from attempting to buy a farm. Horticultural practice teaches us how a profitable business may be conducted on a small area of land, encouraging land ownership as against either tenant farming or the desertion of the farm for the city.

A new horticulture had to be evolved for this western country by the men who came here from the east. Out of a multitude of failures and a few successes came knowledge. This knowledge is mainly confined to men who have made a special study of horticulture. It has not been well distributed. What we need today is a campaign of education which will spread it among the people. As an initial step in this movement the University should offer the best opportunities for horticultural instruction to the students attendant upon its courses.

The horticultural interests of this state demand that men should be employed skillful in teaching the people how to protect their orchards against insect enemies. The ravages of blight and rust have recently destroyed thousands of fruit trees, causing large financial loss to orchardists and nurserymen in the state. These large interests demand that we shall study the diseases above mentioned and learn to control them. None of these things can be done without laboratories and facilities for work.

The present building was erected as a temporary measure. It has served a good purpose in furnishing a place to work while some other

departments were being cared for with permanent buildings. It is entirely inadequate for the present classes and these classes are growing very rapidly. One hundred and ninety-two students are now doing laboratory work in horticulture with laboratories which will not properly accommodate more than half that number. Before a new building can be completed, this number will certainly reach 300 students in the regular course in horticulture. In addition to this, there are at present 200 students in the winter courses who cannot be offered laboratory work at all from lack of space to give this instruction. Still further, the establishment of the home economics course will add another sixty students for horticultural instruction before this building can be completed.

Laboratory work is essential to a good knowledge of horticulture. It teaches how to do by doing. It is the most characteristic thing in the School of Agriculture. To cripple this work robs it of the instruction which makes it distinctly practical and capable of use on the farm. The horticulturists and fruit growers of our state believe that this practical instruction should be increased rather than decreased; that it should become more efficient rather than less efficient, as the enrollment of the school is increased.

Money enough must be devoted to this purpose to erect a permanent and substantial building. We are asking for \$40,000 for this building. The state cannot afford to erect a second temporary home for horticulture. The building that you provide at this time should be adequate to meet the needs of the department for many years to come. If this building is granted, great progress can be made in the development of horticulture in the University. If it is refused, progress can not be made, which means that the department must go backward, for it cannot stand still.

#### A JUDGING PAVILION.

We are asking also for a judging pavilion for stock and grain combined with a veterinary clinic laboratory, where classes in these several branches may be accommodated at the same hours. We also ask for the removal of our steer-feeding plant to a more suitable location. These, with the request for a poultry plant, aggregate \$62,000. True, we have a judging pavilion at the present time in constant use. It is entirely insufficient, and a second building of permanent and substantial nature is needed. Cattle judging, swine judging, and horse judging must proceed in sections at the same hours as the classes are so large that good work cannot be done. When well done, no work is more practical and immediately useful. Classes of one hundred students are now doing work in judging swine in a room which will not properly accommodate more than thirty. The work in stock judging now being offered is equivalent to one hour per week for one thousand students, or five classes per week with one hundred students in each class. Even this does not count the work in grain judging which adds more than four hundred to the number. What will be the condition of our laboratory work in



stock and grain judging if the Legislature fails to provide quarters for this work and the present increase continues for two years more? There will then be twenty sections per week of one hundred students each, trying to work in laboratories which can accommodate only one quarter of that number. Is it worth while to train a young farmer to be a good judge of hogs, of cattle and of corn, so that he is an accurate and safe buyer? The parents of many of our students have acknowledged that the training their sons have received at the school has made the son a better and safer judge than the father with all his years of experience. We are in danger of destroying the practical value of this work from lack of a suitable building. Forty thousand dollars has been asked for this purpose, and the building which this sum of money will provide will be occupied to its full capacity as soon as it is completed.

No central western state is so poorly equipped with class rooms in which to give its work in animal judging and grain judging. This is no credit to Nebraska. It has been the ambition of our faculty to develop the lines of instruction so that the work shall be applicable to the conditions of the farm. This cannot continue unless the buildings asked for animal and grain judging and for horticulture are granted. Do you wish to see the practical phases of our instruction dropped, and the theoretical developed, or do you wish to see both phases of the work developed symmetrically? If so, then all the appropriations asked must be granted.

According to the report of the Bureau of Labor and Statistics the value of annual live stock and animal products sold in the state for the year 1905 was \$176,912,018. This industry is so great that if it can be influenced in the slightest degree by a study of breeds and types of animals, and of nutrition and diseases, such knowledge will repay a hundred fold the cost of instruction. If a tax of one-tenth of one per cent were laid out upon this industry for the purpose of education along animal lines, it would yield a revenue of \$175,000 per year, \$350,000 for the biennium, a sum sufficient to more than maintain all of the agricultural work in the University, and erect all buildings asked for agriculture within the present biennium.

The adoption of the methods of feeding worked out by our Experiment Station would increase the profits of this industry by more than \$1,000,000 per year; more than enough to support the School of Agriculture and the Experiment Station and the whole University twice over from the profits of a single farm industry.

The University grows in response to the public demand. It is not many years since the entire University did not exceed in number those now enrolled in one of the several colleges. Within the last ten years the agricultural school has grown from nothing to an enrollment of 424. The agricultural work has increased from a plant, the expense of which was provided wholly by the United States government funds, to a plant requiring \$150,000 annually for its various lines of work, and

specific appropriations for its permanent improvements. It is admitted that this work pays dividends upon the investment, yet because the regents have found it necessary to ask for an appropriation on the general funds of the state, some who are unacquainted with the work which the University is doing for the farmer are heard to say that these appropriations are extravagant and that they should not be granted.

The amount asked by the regents on the general fund is \$220,000 of which \$180,000 is for new buildings at the farm, \$25,000 for the sub-station at North Platte, and \$15,000 for farmers' institutes. Not one dollar less will do the work which is laid out to be done. If a smaller sum is granted, the work of the School of Agriculture and the Experiment Station must be limited to narrow lines or certain lines of work be abandoned altogether. No state having wealth and facilities comparable with our own is so poorly equipped with buildings for agricultural instruction. Iowa, with an assessed valuation about twice that of Nebraska, supports a University and College of Agriculture, devoting more money to each of these than Nebraska devotes to its University altogether. Iowa has buildings for agriculture far exceeding ours in value, yet she is now building an agricultural hall costing \$250,000. Illinois, Wisconsin, and Minnesota likewise have buildings commensurate with the importance of the work. We are asking \$180,000 for four important buildings, and if any criticism can be made upon the request it is because the amount asked is too small rather than too large. But the need for all these buildings is urgent. They can not wait.

It is useless to say these needed improvements may wait until the state has no other needs, for that time will never come. The needs of this state in education and in other lines will increase year by year. One of our leading educators recently said, "To devote public money to charity is philanthropy; to devote it to the promotion of our productive industries is statesmanship." And so it is the broadest statesmanship to devote moneys to the promotion of those industries which will repay the taxes imposed, by increased profits on the industries of the state. Nebraska can make no better investment than to develop her agriculture to the highest point.

An honored member of the last legislature, after visiting the magnificent agricultural plant in Iowa, said, "This question of appropriations for the University is not a question of poverty or of riches, of state debt or of state surplus. It is a question of disposition. We may cut off ten thousand dollars in appropriations and lose a hundred thousand dollars in decreased value of our agricultural resources. I believe in the liberal support of our University."

A few years ago, before the great state of Illinois had awakened to an appreciation of her privilege to support the Agricultural College, a body of her distinguished farmers appeared before the committee on appropriations and said:

"The people of Illinois are upon record in this matter. It is the agri-

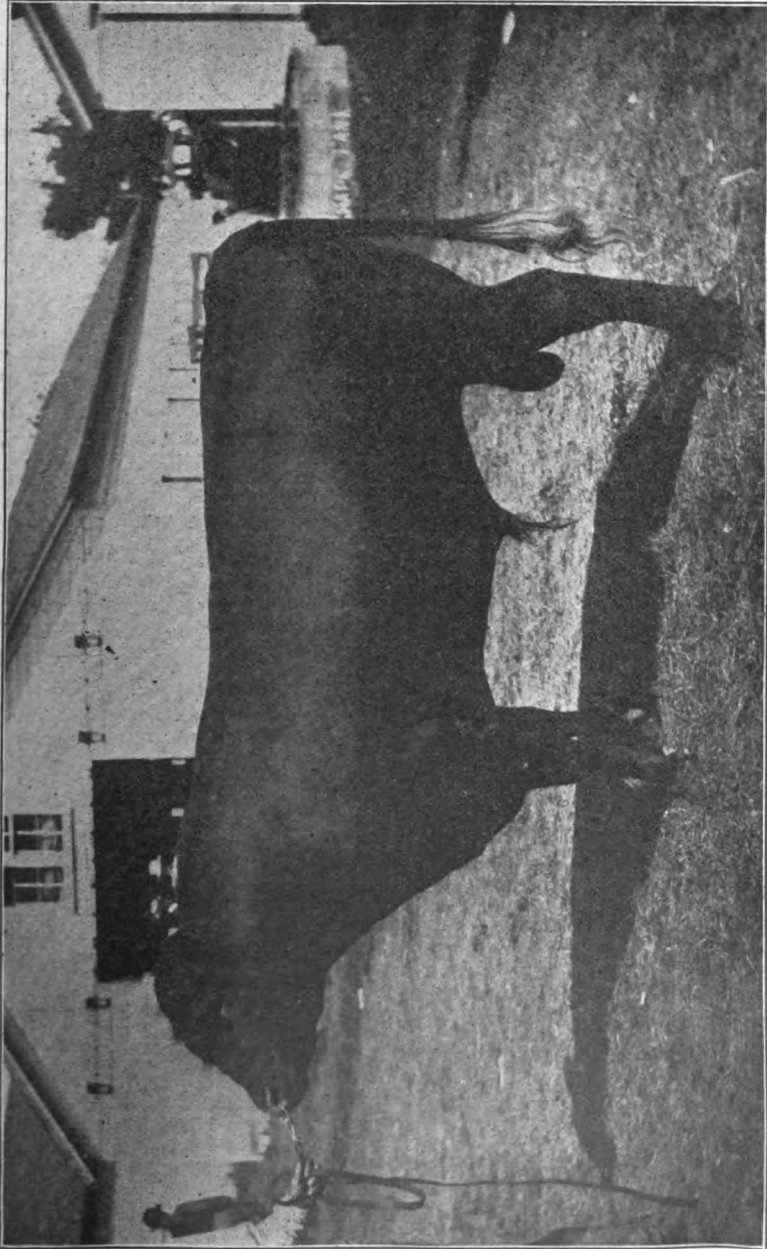
cultural associations that ask the passage of this bill. In asking its passage they ask no special privileges and they make no extravagant demands upon the treasury of the state. As one large taxpayer put it, 'We only ask to be allowed to put our hands into our own pockets, and take some of our own money to develop our own business.' And who shall say that the farmer does not pay his full share of the taxes of the state?"

We ask that these appropriations be made in order that agriculture in the University may go forward and not backward, and that the school and station may be put on a permanent basis without crippling the other lines of University work.

The increased profits upon the corn crop in Nebraska in 1906, due to our work, will pay many times over. The increased profits upon the winter wheat crop will likewise pay the tax. The benefits of the substation to western Nebraska will pay the entire \$220,000 and leave a margin of profit. The profits of the spraying demonstration in southeastern Nebraska in 1906 will build Horticultural Hall. The profits which will be derived from the feeding experiments with cattle and hogs will pay the entire mill tax, and the tax on the general fund in addition.

The influence of all these lines of work is continuous. It is not limited to one year or two years or five years; it is perpetual in its beneficent effect. Nor is it limited in its influence to the farming class only; this beneficial effect is distributed among all the people. It builds up the country home and stimulates its intellectual and social life; it makes the wealth of the country merchant and the country town, and this prosperity extends to the city, until the folds of its mantle envelop all our industries, and it affects the life of all the people.

Will the taxpayers of this state, appreciating the service which the University has rendered in upbuilding its education and its industries, support the appropriations asked? Will they insist that this work go forward, increasing in usefulness with each added year, or will they permit to languish and go backward in spite of the returns they have already received on the investment? No state ever paid too much for her educational advantages. No states have ever been so powerful, wealthy, and respected as those that have spent the most money for the development of education; none are so poor as those in which ignorance is most prevalent. As our people have responded generously in the past to the needs of their University, so, I believe, will they now, in the time of her greater needs.



A RED POLLED YEARLING PREMIUM WINNER AT 1906 STATE FAIR.

### CLASS SUPERINTENDENTS' REPORTS.

#### CLASS A—HORSES, MULES AND ASSES.

W. A. APPERSON, SUPERINTENDENT.

Barn No. 1, 38 stalls at \$2.....	\$76 00
Barn No. 2, 38 stalls at \$2.....	76 00
Barn No. 3, 38 stalls at \$2.....	76 00
Barn No. 4, 32 stalls at \$2.....	64 00
Received of Mr. Rudge for outside horse.....	1 00
	<hr/>
	\$293 00
 Paid Secretary, September 1.....	 \$118 00
Paid Secretary, September 7.....	102 00
Frank Iams, stall rent .....	52 00
Alex Calder .....	12 00
Apperson's check today, September 13, 1906.....	9 00
	<hr/>
	\$293 00

## BARN No. 1.

1	Frank Iams	Frank Iams	38
2	Frank Iams	Frank Iams	37
3	Frank Iams	Frank Iams	36
4	Frank Iams	Frank Iams	35
5	Frank Iams	Frank Iams	34
6	Frank Iams	Frank Iams	33
7	Frank Iams	Frank Iams	32
8	Frank Iams	Frank Iams	31
9	Frank Iams	Frank Iams	30
10	Frank Iams	Frank Iams	29
11	Frank Iams	Frank Iams	28
12	Frank Iams	W. E. Wells	27
13	Frank Iams	W. E. Wells	26
14	Frank Iams	W. E. Wells	25
15	Frank Iams	W. E. Wells	24
16	K. C. Miller	S. P. Briggs	23
17	K. C. Miller	H. E. Peterson	22
18	K. C. Miller	H. E. Peterson	21
19	Geo. Schwab	H. E. Peterson	20

Thirty-eight stalls at \$2.00 ..... \$76 00

## BARN No. 2.

39	Watson, Woods Bros. & Kelly	Watson, Woods Bros. & Kelly	76
40	Watson, Woods Bros. & Kelly	Watson, Woods Bros. & Kelly	75
41	Watson, Woods Bros. & Kelly	Watson, Woods Bros. & Kelly	74
42	Watson, Woods Bros. & Kelly	Watson, Woods Bros. & Kelly	73
43	Watson, Woods Bros. & Kelly	Watson, Woods Bros. & Kelly	72
44	Watson, Woods Bros. & Kelly	Pete Johnson	71
45	Watson, Woods Bros. & Kelly	Pete Johnson	70
46	Alex. Calder	Rhea Bros.	69
47	Alex. Calder	Rhea Bros.	68
48	Alex. Calder	Rhea Bros.	67
49	Alex. Calder	Rhea Bros.	66
50	Alex. Calder	Rhea Bros.	65
51	Alex. Calder	Rhea Bros.	64
52	Rhea Bros.	Rhea Bros.	63
53	Rhea Bros.	Rhea Bros.	62
54	Rhea Bros.	Rhea Bros.	61
55	Rhea Bros.	Rhea Bros.	60
56	Rhea Bros.	Rhea Bros.	59
57	Rhea Bros.	Rhea Bros.	58

Thirty-eight stalls at \$2.00 ..... \$76.00

## BARN No. 8

77	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	114
78	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	113
79	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	112
80	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	111
81	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	110
82	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	109
83	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	108
84	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	107
85	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	106
86	Lincoln Imp. Co., Sullivan	Lincoln Imp. Co., Sullivan	105
87	Wm. Chamberlain	Wm. Chamberlain	104
88	Wm. Chamberlain	Wm. Chamberlain	103
89	Wm. Chamberlain	Chas. Casey	102
90	Wm. Chamberlain	Chas. Beustetter	101
91	Billeter, Burress & Co.	Billeter, Burress & Co.,	100
92	Billeter, Burress & Co.	Billeter, Burress & Co.,	99
93	Billeter, Burress & Co.	Billeter, Burress & Co.	98
94	Billeter, Burress & Co.	Billeter, Burress & Co.	97
95	Billeter, Burress & Co.	Billeter, Burress & Co.	96

Thirty-eight stalls at \$2.00 .....\$76.00



## BARN No. 4

115	Frank Howard	Mr. Kinny	152
116	Frank Howard	Mr. Kinny	151
117	Frank Howard	Mr. Kinny	150
118	Frank Howard	Mr. Kinny	149
119	Frank Howard	Mr. Kinny	148
120	Frank Howard	Mr. Kinny	147
121	Frank Howard	Mr. Kinny	146
122	Mr. Adams	Mr. Kinny	145
123	Empty	Adams	144
124	Diers Bros.	Adams	143
125	Diers Bros.	Adams	142
126	John R. Quein	Adams	141
127	J. N. Harrison	Adams	140
128	J. N. Harrison	Adams	139
129	J. N. Harrison	Empty	138
130	Empty	Wm. Ernst	137
131	Empty	Wm. Ernst	136
132	John Neylson	Empty	135
133	Vanderslice	Empty	134

Thirty-two stalls at \$2.00 ..... \$64.00

## CLASS B—CATTLE.

O. P. HENDERSHOT, SUPERINTENDENT.

HEBRON, NEBR., September 8, 1906.

*Mr. W. R. Mellor, Lincoln, Nebr.*

DEAR SIR: Enclosed you will find a full report of my acts as superintendent of Class "B." We have 420 stalls in the seven barns and thirty on the east side of barn 1, making in all 450 stalls; of these I collected for 447 stalls. You will see by the diagrams that I had one vacant stall in barn 2 and two vacant stalls in barn 4. So far as possible I kept the different breeds in barn by themselves, and only had to split one herd, and that was done to accommodate Mr. Wornall, and by the consent of Mr. H. C. Glissman, I did not assign the stalls until the herd arrived, and gave them just what they required. In the matter of location I think all the old exhibitors got the locations they asked for and there was no friction on this score in our department. We saved thirty-six stalls that were used for feed by putting the floors in the attic, and with the use of the booth in the stock judging pavilion for five head, we got along nicely. I had orders for sixteen stalls from J. A. Shade, of Kingsley, Ia., ten stalls for Cornish & Patten of Osborn, Mo., and six stalls from J. F. Egger, of Roca, Neb., that we could not accommodate. These were all notified by wire in ample time to prevent their coming. There was some complaint by exhibitors at not having a shed or tent to keep the nurse cows out of the boiling hot sun. We had sixty of these tied to the fence posts. The barns without the cupolas get very hot two nights, and some of the herdsmen tied their cattle outside to cool them off. I would recommend that there be two cupolas placed on each of the barns that are without them. Our Thursday afternoon matinee seemed to please the exhibitors and was enjoyed by the people generally.

I have in my mind a plan for a judging card to be used in all live stock judging that I think will prevent mistakes creeping in in making the report from the judge to the bookkeeper and in calling the classes in for the judging. This could be in book form, and each superintendent have one to check up with the bookkeeper at the close of each class and finally be turned in with his books at the close of exhibiting; and if there were disputes as to the awards made, the Secretary could refer to the original report as it was taken from the entry card, and if it corresponded with it you could be reasonably sure the books were correct, and if not, you would have the evidence at hand to correct the books then and there.

I think the entries for "sweepstakes" are superfluous, as they are nominated by their winning first money in their class, and do not require to be entered before they are shown in their class and win first place. As our practice has been, we enter every animal for sweepstakes that we enter for class premiums, making an enormous amount of work that counts for nothing.

I wish to express my sincere thanks to the Board for their very

courteous treatment from start to finish. I fully appreciate the honor of the office and would be glad to serve you again (provided you asked me); only for the press of my business during the months of July and August that takes me away from home. I cannot give correspondence proper attention without a personal sacrifice to my own business, and I feel, for the interest of the fair and the satisfaction of the exhibitors, they have a right to have an immediate answer to their inquiries, and I am away for thirty days at a stretch, if I give my own business proper attention during July and August.

If my work has pleased you I am satisfied, but must ask you to excuse me for next year. I make this known to you that you will not re-appoint me. Again thanking you for courtesies extended to me, I am, yours sincerely,

O. P. HENDERSHOT.

*Financial Report of Class B.*

Received for 30 stalls on east side of barn (1) one.....	\$30 00
Received for 60 stalls in barn one .....	60 00
Received for 59 stalls in barn two .....	59 00
Received for 60 stalls in barn three .....	60 00
Received for 58 stalls in barn four .....	58 00
Received for 60 stalls in barn five .....	60 00
Received for 60 stalls in barn six .....	60 00
Received for 60 stalls in barn seven .....	60 00
Received for 5 stalls in live stock pavillion booth.....	5 00

452 stalls.

Collected, \$452 00

June 4, 1906, mailed to Secretary Mellor draft for.....	\$54 10
P. O. order .....	1 00
Check, O. P. H. ....	60 00
Checks and drafts (see statement) .....	105 00
September 1, 1906, receipt, Mellor .....	57 00
September 2, 1906, receipt, Russell .....	65 00
September 7, 1906, receipt, Russell .....	58 00
September 8, 1906, check, Mousel Bros.....	16 00
September 8, 1906, check, O. P. H.....	36 00

Total .....\$452 10

I hope you may find the above correct.

Yours truly,

O. P. HENDERSHOT.

## CLASS C—SWINE.

L. W. LEONARD, SUPERINTENDENT.

PAWNEE CITY, NEBR., September 12, 1906.

*To the Honorable President and Board of Managers of the Nebraska State Fair:*

GENTLEMEN: I beg leave to submit the following report:

The swine exhibit of 1906 was made up of more good animals than that of any preceding fair. There were shown 1,428 animals against 1,431 shown in 1904, which is the highest record for the Nebraska state fair.

There were more pens used this year than ever before, but the rule allowing but two pens to one exhibitor for pigs under six months keeps down the number, but gives a much better quality to the exhibit. I would suggest that this rule be continued in force.

The exhibit for 1906 was made up as follows:

Duroc-Jerseys, 62 exhibitors, 627 head.

Poland-Chinas, 52 exhibitors, 616 head.

Chester Whites, 6 exhibitors, 96 head.

Berkshire, 7 exhibitors, 89 head.

Total, 127 exhibitors, and 1,428 head of hogs.

The total cash receipts for pens in the swine department was \$551.00.

I would suggest that in the future no entry be required for sweepstakes, but that only first and second premium animals be permitted to show for sweepstakes and that they earn their eligibility as the show proceeds.

I would suggest that the rule imposing a fine upon an exhibitor for failing to show his animals be stricken out.

Respectfully submitted,

L. W. LEONARD, Superintendent of Swine.

## CLASS D—SHEEP.

R. M. WOLCOTT, SUPERINTENDENT.

PALMER, NEBR., September 15, 1906.

SECRETARY MELLOR: Your superintendent of Class D, sheep, begs to make the following report. While there were not as many exhibitors, there were as many sheep on the ground, and they were of full better quality than in former years, which shows the sheep men are keeping up with the progress of time, which is plainly indicated by the flocks they are bringing out, but generally they were not pleased with the money awards. They all say cut out the fourth money and add it to the other three moneys, and they also ask to have the competition clause cut out and instruct your superintendent to have the judge say in each case, worthy of 1st, 2d or 3d money, as merit may warrant. And I think,

Mr. Secretary, if this method is adopted we will have our sheep pens filled as full accordingly as the other live stock departments.

Respectfully yours,

R. M. WOLCOTT, Superintendent.

CLASS E—POULTRY AND PET STOCK.

C. M. LEWELLING, SUPERINTENDENT.

*To the Nebraska State Board of Agriculture:*

We, the undersigned poultrymen, fanciers and breeders of Nebraska, do ask that you give this petition the attention it merits, thus helping to correct evils existent in the poultry department of the state fair.

1. We petition that a rule be made which will limit the number of fowls shown by one breeder, unless he be a resident of Nebraska.

2. This will keep the huckster from outside the state from coming into the poultry department annually with a long string of almost obsolete varieties which carry away prize money that should be given to legitimate breeders.

3. Last year the prizes were cut down in size and it only encouraged hucksters to show because legitimate breeders either from in or out the state could not afford to show and did not owing to too small money prizes.

4. The big fair managements all over the country see the evil of the rounder huckster and are barring him from competition.

5. Hucksters have carried away from the Nebraska fair as high as \$300 in one season, which money should have gone into the channels it was intended for, the upbuilding of poultry breeding—not huckstering.

6. Very often in obsolete varieties their birds are not worthy of any awards, being poor representatives of their breed.

7. The huckster brings to the fair yearly a lot of sick birds that are a menace and his coops are foul and breed disease.

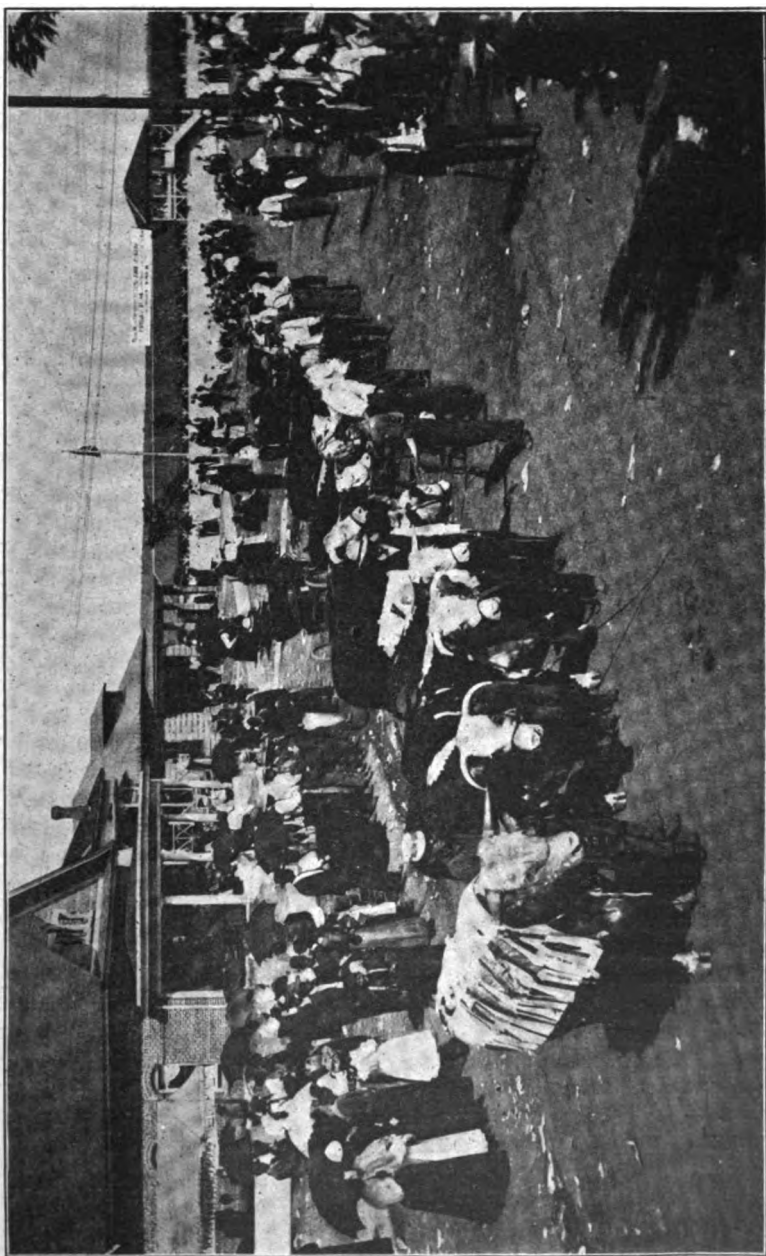
8. To shut hucksters from competition would increase the breeding of many varieties.

9. Hucksters have been known to show single birds, those entered singly for prizes, again in the pen classes, thus trying to win two or more money prizes with one bird.

10. We ask for a rule limiting exhibitors to twenty-five birds unless they be Nebraska residents.

11. We ask that the rule be enforced which makes all exhibitors enter birds in the name of the actual owners only.

12. Give us these with an increase in the amount of prize money, say such as you gave us in 1900, and we will work to make a 3,000 fowl exhibit in 1907.



LIVE STOCK PARADE, 1906 STATE FAIR.

13. Our requests, if granted, would not shut out the legitimate breeders from outside the state who wanted to show a good line of birds.

I. L. LYMAN.  
WM. WILSON.  
E. E. SMITH.  
H. H. CAMPBELL.  
W. R. FETTERMAN.  
O. O. WHITE.  
E. A. PEGLER.  
C. W. BREHM.  
O. G. QUINN.  
A. H. SMITH.  
ED. B. DAY.  
J. E. FULMER.  
H. G. YOST.  
L. W. PARK.  
W. A. IRVIN.  
GEORGE GROTT.

O. R. MYERS.  
J. S. CATTERSON.  
H. H. HALL.  
R. E. PITCHER.  
A. WILSON.  
G. E. SCHREPF.  
A. D. BURHANS.  
N. MACKEN.  
E. E. MACKEN.  
SETH ABBOTT.  
C. B. KNERR.  
G. HENDRICKSON.  
FRED M. RODMAN.  
PERRY STRANDBURG.  
J. & GOURLAY.

#### CLASS F—FARM PRODUCTS.

L. MORSE, SUPERINTENDENT.

BENKELMAN, NEBR., November 17, 1906.

Mr. W. R. Mellor, Secy., Lincoln, Nebr.

DEAR SIR: I herewith send you a few suggestions for Class F.

Hard winter wheat and red winter wheat; barley, white hulless and black hulless.

Potatoes, largest and best of variety mentioned, second; best for family and commercial use, two classes.

Stalk corn, two classes, six largest stalks; six best stalks with corn on them. All ear corn should be of the previous year crop, as the first of September gives us the green corn show and is a disgrace to our biggest and best crop. There are fifty strangers at the state fair to see our agricultural display to one at the winter corn show. Let us show our best.

The fourth premium when very small should be discarded as no one wants it and makes useless work for the judges. The state should be divided east and west for the farm products, and the county collective exhibits. The western counties will then make their best showing when entering a class where competition means something.

Yours truly,

L. MORSE.

## CLASS G—LADIES' TEXTILE DEPARTMENT.

MRS. C. F. LADD, SUPERINTENDENT.

LINCOLN, NEBR., September 20, 1906.

*To the Most Honorable, Nebraska State Board of Agriculture:*

DEAR SIRS: In compliance with your request that I should give a report of my department, Class "G," Textile Department, I cheerfully and gladly make the following:

It is my belief that our department made a better showing this year, both in quality and quantity than ever before. It is my belief that our exhibit was more systematically put up, and our best work showed off to better advantage.

This opinion is based on the general comments of fair visitors, and on the remarks made by those having had experience in these affairs.

Heretofore Lancaster county has had a small space devoted to them, in which space they have crowded all the best needlework, and fancy embroidery of the ladies of Lincoln.

This year the county officers consented to give up confining their exhibit to that small space, and let all work be put up according to the lot numbers of the state premium list. The county revised their premium list to correspond to the state premium lists as far as they were financially able. So we all worked together for the good of all, and could crowd our less attractive work, and could display our best colored and white embroidery and lace work to better advantage, and credit to the state and county, and to the economy of space. Our exhibit was more up to date this year, many of the old time-worn hoods, etc., having disappeared (let us hope for all time). The newer styles of embroidery were in greater evidence, and good competition showed the ladies' appreciation of the Board's efforts to better the premium list.

Our department was entirely free from friction. All the assistants and the judge were unanimous in their efforts to assist in giving entire satisfaction to all exhibitors, and to facilitate the work. Our department was as free from complaints over the premium awards as it could ever possibly be.

In the one case of dissatisfaction, the judge was wholly justified in her decision. There was a misunderstanding about the article being required to be "handmade."

In my recommendations for changes in the Premium List I have called attention to the places where the word "handmade" should be printed to avoid this trouble.

There was one loss reported in our department, but all members of department are unanimous in the opinion that the article was never in our possession. All work has been turned over to owners except in one case, and owner has signified her intention of calling for her work.

I cordially recommend a third premium in Kensington Embroidery, as I have indicated in my premium recommendations, as the work and number of entries justify it.



In just one entry, "Tollet Set," the quality and number of entries does not merit as large a premium as it has. It is in lot 12, premium No. 1058. I would recommend cutting it down as I have indicated in "recommendations."

On looking over the Iowa and Illinois premium lists, I believe our list is more systematic, and meets the requirements of our western state better than either of them. I found the entry "*article not named above*," used by them and have adapted it to our needs. I found they had "Velvet Quilts." We have never had a place for them, so I have recommended such an addition.

Aside from these, I believe we cover more articles and better varieties of needlework, embroideries, etc., than they do.

I have submitted three communications to the Board. In the first I recommended cash premiums for articles entered in Discretionary Lot which were among our most creditable exhibits. I also recommended whole premiums for two different articles where there was but one entry, the article in each case being very superior of its kind. In my second communication I made recommendation for addition to the premium list for next year; I also suggested rearrangement of several of the lots, hoping to have them all more systematic. I also made a few suggestions in regard to the rules governing Class G that I consider necessary.

In this, my third communication, I would like to say that I rejoice in the prosperity of the fair this year, and hope more of such years will follow, that we may have a permanent, convenient, fire-proof building in which to house our fine arts and textiles in the near future. It is my belief that our department was conducted with as little if not with less expense and with fewer passes than departments smaller than ours.

I believe in my three communications I have covered most of the necessary items on which to make a report.

In conclusion, I must say for myself that I have tried hard to conduct my department honestly and conscientiously, to deal with every one alike courteously and justly, and I have enjoyed my work.

I thank you all for your support, and regret to tell you that I cannot be a candidate for the position of superintendent for next year. I trust my report will be satisfactory to you all.

Respectfully submitted,

MRS. C. F. LADD, Supt. Class G.

LINCOLN, NEBR., September 7, 1906.

*To the Most Honorable State Board of Agriculture, Nebraska State Fair,  
Lincoln, Nebraska:*

DEAR SIRS: Inasmuch as there was saved in our department, Class G, Textiles (according to a hastily compiled list, taken by me from the books), about \$132 in premiums, same having been saved on account of there being no entries in some places and no competition in others, and only a first or second premium awarded, I would respectfully recommend to you full premiums on the following:

(1.) In Lot 6, 1006, Mrs. F. D. Palmer, on six doilies. There was no competition, but her work was exceptionally perfect, and the doilies were six in number, the smallest being fully six inches across. They were greatly admired for their beautiful designs also. Had there been any amount of competition, I am sure they would have taken first premium.

(2.) In Lot 15, Old Ladies' Department, 1093, Ann Jenkins, Walton, Nebr., cotton crochet bedspread, I would also recommend for full premium. Her spread was of full size, of a difficult and effective pattern, evenly and nicely crotcheted. I like to have the "old ladies" well taken care of. She is evidently a farmer woman and a widow, and I am sure a full premium would be appreciated; it certainly is well deserved.

In Discretionary Lot, I would heartily recommend for money premiums the following:

(1.) First and second premium on embroidered shirt waist as the books show, \$2 for first and \$1 for second premium.

(2.) First and second premium on embroidered dress as the books show, \$2 for first and \$1 for second.

I intended recommending embroidered shirt waist last year for the premium list, and was surprised not to see it on the list; perhaps I forgot it.

I would appreciate your granting these recommendations.

Very respectfully,

MRS. C. F. LADD, Supt. Class G, Textiles.

#### RECOMMENDATIONS FOR CHANGES IN PREMIUM LIST.

In rules, the insertion of appended note on old premium list in regard to Lot 12, "Embroidery not otherwise specified, etc.," using the word "particularly" or "specially," as you see fit. In article in regard to "Lots not open to professionals," I would recommend adding "5, 7, 9, 12, 15 and 16," making it read "2, 3, 4, 5, 6, 7, 9, 12, 15 and 16," as lot numbers read now. If "Shadow Embroidery" is put in, have numbers read "13" instead of "12," etc., also "Work must be completed."

In Lot 1, add velvet quilt, as they do not rightfully belong under the silk quilt entry places, and we always have them.

In Lot 2, cut out both *cotton-knit* and *woolen-knit* rugs, as all the rugs we get can compete in Lot 1, Household Fabrics, and Lot 15, in Old Ladies' Department as "hearth rugs."

In Lot 4, I would print the word "handmade" after "Baby Outfit," that there can be no misunderstanding, also "not less than 6 pieces." Add "Set of 4-piece underwear distinct from above," \$4, \$2. Add "Sofa pillow," which will include all silk patchwork, tufted, velvet and old fashioned pillows, and which will be distinct from the entry which follows, which is "Sofa pillow in cross stitch."

Add "Stocking bag," \$1, 50c, all in places indicated on old list.

In Lot 6. See appended sheet. As this style of embroidery is very popular now, I would recommend the addition of articles designated. See old premium list, also, which I have appended.

In Lot 7, add to the entry "Battenburg lace," the words "or article not named above." (See old premium list appended and a re-arranged list appended.)

In Lot 9. If you should decide to exclude all articles from Lot 12, except such as are not otherwise listed as I have recommended for the rules at the beginning of this Class G, then all the colored silk embroidery which is really Kensington will be excluded from Lot 12 and be made to enter in Lot 9, where it belongs. That will make the number of entries larger than ever in Lot 9. We had forty-seven center-pieces this year, and thirty-five or some such number last year, and only a first and second premium. Competition is so close both in lunch cloth, center-piece and sofa pillow in this Lot 9, that I would like to recommend a third premium for these three entries:

For lunch cloth .....	\$2 00	\$1 50	\$1 00
For center-piece .....	2 00	1 50	1 00
For sofa pillow.....	2 00	1 00	50

In Lot 12, I would like to add two entries, "Embroidered dress, \$3, \$2, also "Handkerchief case, \$1, 50 cents," and put back in an entry that was dropped in some way this year—clerical error, perhaps—"Tray cloth, \$2, \$1." I have appended a rearranged list which I think you will find more systematically arranged.

In Lot 13, I have appended what I think is a more systematic list. I would recommend that the premium values be changed on "lunch cloth" and "center-piece," giving "lunch cloth" the larger premium as it is a larger and more elaborate piece of work than a "center-piece." I have added some *distinguishing words* also to the articles. See old marked premium list and rearranged list. I would like to cut out one entry, "point lace fichu," and put "bolero" in its place.

In Lot 14 (See old marked premium list), I would like to change the entry "tatting lace" to "article not named above," or use the word "*any* article not named above," as you see fit.

In Lot 15 and Lot 16, the "Old Ladies" and "Girls" departments respectively, both of which I am the most interested in of all, I would recommend additions.

I have appended a rearranged list for Lot 15. I would advise striking out the word "cotton" in two of the entries, making it a little more liberal, to include linen or silk crocheting, linen particularly.

In Lot 16, the "Girls' Department," I would repeat the word hand-made in the second and third item and I would call your attention to the last two items not being completed, all perhaps due to clerical errors. I would like to add the two items, "Best 3-piece underwear, distinct from above, \$1.50, \$1.00". Also "Best Battenburg piece, \$1.00, 50 cents," in the places indicated in marked old premium list. The girls have been entering Battenberg center-pieces as tidies and I do not approve of it. It encourages them in being "not on the square."

I would recommend "Shadow embroidery" for a separate and distinct

lot and would advise putting it in ahead of Lot 12, "Embroidery not otherwise specified." It is a very simple and not difficult embroidery. Perhaps four entries would be sufficient to cover all the needs of Shadow Embroidery.

Best shirt waist.....	\$2 00	\$1 00
Best apron .....	1 50	75
Best sofa pillow .....	1 50	75
Best article not named above.....	1 50	75

I would recommend putting Lot 17, "Bulgarian work," in ahead of Lot 12, "Embroidery not otherwise specified," also.

I have made a rapid summary of the premiums added and find they amount to nearly \$70.00. I made a rough list taken from the entry books at close of fair of premiums where there were no entries; also where there was no competition and first or second premium awarded as books show and the total was somewhere near \$132, so I believe I am justified in recommending these additions. Should the Board not see fit to add all of these, I should like to be given an opportunity of going over them again with a member or committee of the Board. I would be most willing to "proof read" our list also. Please don't cut down my Old Ladies' and Girls' list anyway.

Respectfully submitted,

MRS. C. F. LADD.

#### WOMAN'S DEPARTMENT.

##### CLASS G—LADIES' TEXTILE DEPARTMENT.

MRS. C. F. LADD, LINCOLN, SUPERINTENDENT.

Rule 21. When there is but one exhibitor competing for a premium, the committee may award no premium, or second or first, as merit may warrant. But in no case shall the money award exceed half that stipulated in case of competition. In non-competitive awards committee must state in writing to the Board, in detail, the reason for awards. All non-competitive awards are subject to revision and change by the Board of Managers, or the State Board when in session. *Provided*, The Board of Managers or the State Board shall have power, in extraordinary cases, with evidence justifying, to award a full cash premium.

93. Blue ribbon or card denotes first premium; red ribbon or card second premium; green ribbon or card third premium; white ribbon or card fourth premium; yellow ribbon or card fifth premium; orange ribbon or card sixth premium. For all sweepstakes royal purple will be used. Ribbons denoting premiums will be furnished in classes A, B, C and D; for all other classes cards will be used.

In Lot 12, "Embroidery of material not otherwise specified," articles must be entered here which are not particularly (or specially) mentioned in premium list. Each variety of work must compete with its kind—satin stitch with satin stitch—and *Kensington* with *Kensington*, etc.

Articles in this class to which first premiums have heretofore been awarded by this Association will not again be eligible to competition. Article required to be made within five years.

Lots 2, 3, 4, 5, 6, 9, 12, 15 and 16 are not open to professionals. Must be the work of the exhibitor. All work must be completed.

No animal, or article, can compete for more than one premium, except in sweepstakes or county collective exhibits.

Competition limited to Nebraska exhibitors only.

Lot 1—Household Fabrics and Quilts.		1st Pre.	2d Pre.
Best rag carpet, 10 yards or more.....		\$3 00	\$1 50
hearth rug .....		2 00	1 00
patchwork worsted quilt, finished.....		3 00	1 50
crazy work worsted quilt, finished.....		3 00	1 50
silk patchwork quilt, finished.....		3 00	1 50
silk crazy work quilt, finished.....		4 00	2 00
velvet quilt .....		3 00	2 00
patchwork cotton quilt, finished.....		3 00	1 50
solid quilting on cotton quilt, finished.....		3 00	1 50
portieres .....		3 00	1 50

Lot 2—Knitting Silk, Wool and Cotton.			
Best silk knit infants' socks.....		\$1 00	\$0 50
silk knit infants' sacque.....		2 00	1 00
silk knit infants' hood.....		2 00	1 00
woolen knit lace, 1 yard or more.....		1 00	50
woolen knit slippers .....		1 00	50
woolen knit mittens or gloves.....		1 00	50
woolen infants' socks .....		1 00	50
woolen knit infants' sacque .....		1 00	50
woolen knit infants' hood .....		1 00	50
woolen knit skirt .....		2 00	1 00
woolen knit cape or shawl.....		2 00	1 00
woolen knit afghan .....		2 00	1 00
cotton knit bed spread.....		3 00	1 50
knit tidy .....		1 00	50
cotton knit dollies (6) .....		2 00	1 00
cotton knit lace, 1 yard or more.....		1 00	50
collection of knitting distinct from above not less than 12 pieces .....		5 00	3 00

Lot 3—Crotcheting Silk, Wool and Cotton.			
Best crotcheted purse.....		\$1 00	\$0 50
silk crotcheted infants' saque .....		2 00	1 00
silk crotcheted infants' bootees .....		1 00	50
silk crotcheted infants' hood .....		2 00	1 00

	1st Pre.	2d Pre.
Best silk crocheted tidy.....	\$1 00	\$0 50
woolen crotcheted slippers .....	1 00	50
woolen crocheted infants' bootees .....	1 00	50
woolen crocheted infants' saque.....	1 00	50
woolen crocheted infants' hood .....	1 00	50
woolen crocheted cape or shawl.....	2 00	1 00
woolen crocheted afghan .....	2 00	1 00
woolen crocheted lace, 1 yard or more.....	1 00	50
cotton crocketed bed spread.....	3 00	1 50
crocheted tidy .....	1 00	50
cotton crocheted lace, 1 yard or more.....	1 00	50
cotton crocheted doilies (6) .....	2 00	1 00
collection of crochet work, distinct from above, not less than 12 pieces .....	5 00	3 00

## Lot 4—Sewing and Hand Work.

Best baby outfit, handmade.....	\$5 00	\$3 00
handmade shirt .....	2 00	1 00
handmade nightdress .....	2 00	1 00
handmade skirt .....	2 00	1 00
handmade chemise .....	2 00	1 00
handmade corset cover .....	2 00	1 00
handmade drawers .....	2 00	1 00
set of 4 pieces underwear, distinct from above.....	4 00	2 00
handmade dress .....	3 00	1 50
handmade fancy apron .....	2 00	1 00
handmade work apron .....	1 00	50
handmade apron in cross-stitch .....	1 00	50
handmade child's dress .....	2 00	1 00
sofa pillow .....	2 00	1 00
handmade sofa pillow in cross-stitch.....	2 00	1 00
handsome fancy pin cushion .....	1 00	50
handmade whisk broom holder.....	1 00	50
stocking bag .....	1 00	50
patching on cotton and wool .....	1 00	50
darning on cotton and wool.....	1 00	50
specimen button holes on 3 materials.....	1 00	50
specimen hemstitching .....	1 00	50

## Lot 5—Drawnwork.

Best lunch cloth .....	\$3 00	\$1 50
centerpiece .....	2 00	1 00
tray cloth .....	2 00	1 00
sofa pillow .....	2 00	1 00
doilies (6) .....	2 00	1 00

	1st Pre.	2d Pre.
Best dresser scarf .....	\$2 00	\$1 00
sideboard scarf .....	2 00	1 00
handkerchief .....	2 00	1 00
shirt waist .....	2 00	1 00
pillow shams .....	3 00	1 50
display of 12 pieces, distinct from above.....	5 00	3 00

Lot 6—Satin Stitch and English Eyelet Embroidery.

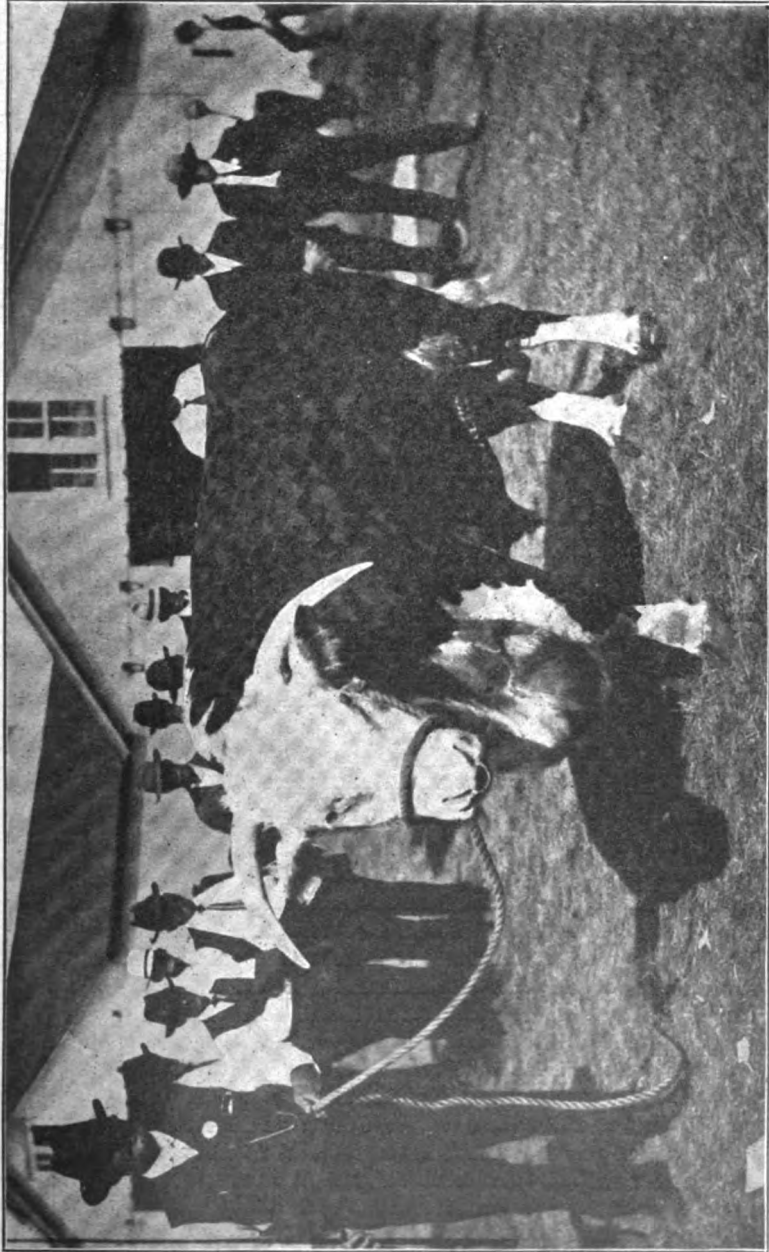
Best pillow shams or sheets.....	\$3 00	\$1 50
table cloth and napkins .....	2 00	1 00
lunch cloth .....	2 00	1 00
centerpiece .....	2 00	1 00
tray cloth .....	2 00	1 00
six doilies .....	2 00	1 00
six handkerchiefs .....	2 00	1 00
pair of towels .....	1 00	50
shirt waist .....	2 00	1 00
infant's shawl or coat .....	2 00	1 00
infant's skirt .....	2 00	1 00
article not named above .....	2 00	1 00
display of 12 pieces distinct from above.....	5 00	3 00

Lot 7—Battenberg Lace Work.

Best piano cover .....	\$3 00	\$2 00
lunch cloth .....	3 00	2 00
centerpiece .....	2 00	1 00
tray cloth .....	2 00	1 00
six doilies .....	2 00	1 00
sideboard scarf .....	2 00	1 00
dresser scarf .....	2 00	1 00
pillow shams .....	2 00	1 00
Battenberg lace—by yard or article not named above..	2 00	1 00
sofa pillow .....	2 00	1 00
display of 12 pieces, distinct from above.....	5 00	3 00

Lot 8—Outline Embroidery.

Best pillow shams .....	\$1 00	\$0 50
apron .....	1 00	50
tray cloth .....	1 00	50
six doilies .....	1 00	50
table cover .....	1 00	50
sideboard scarf .....	1 00	50
dresser scarf .....	1 00	50
sofa pillow .....	1 00	50
display of 12 pieces, distinct from above.....	3 00	2 00



A HEREFORD PREMIUM WINNER AT 1906 STATE FAIR.



## Lot 9—Kensington Embroidery.

	1st Pre.	2d Pre.	3d Pre.
Best lunch cloth .....	\$2 00	\$1 50	\$1 00
tray cloth .....	2 00	1 00	....
centerpiece .....	2 00	1 50	1 00
six doilies .....	2 00	1 00	....
sideboard scarf .....	2 00	1 00	....
dresser scarf .....	2 00	1 00	....
sofa pillow .....	2 00	1 00	50
pin cushion .....	1 00	50	....
display of 12 pieces, distinct from above.....	5 00	3 00	....

## Lot 10—Mount Mellick Embroidery.

	1st Pre.	2d Pre.
Best lunch cloth .....	\$2 00	\$1 00
centerpiece .....	2 00	1 00
tray cloth .....	2 00	1 00
six doilies .....	2 00	1 00
sideboard scarf .....	2 00	1 00
sofa pillow .....	2 00	1 00

## Lot 11—Hardanger and Cut Work.

Best lunch cloth .....	\$3 00	\$2 00
centerpiece .....	2 00	1 00
six doilies .....	2 00	1 00
tray cloth .....	2 00	1 00
sideboard scarf .....	2 00	1 00
dresser scarf .....	2 00	1 00
toilet mats .....	2 00	1 00
sofa pillow .....	2 00	1 00

## Lot 12—Embroidery of any Material Not Otherwise Specified or Entered in Other Classes.

Best dress .....	\$3 00	\$2 00
table cover .....	2 00	1 00
piano cover .....	2 00	1 00
lunch cloth .....	2 00	1 00
centerpiece .....	2 00	1 00
tray cloth .....	2 00	1 00
six doilies .....	2 00	1 00
sofa pillow .....	2 00	1 00
laundry bag .....	1 00	50
pin cushion .....	1 00	50
handkerchief case .....	1 00	50
sideboard scarf .....	2 00	1 00
dresser scarf .....	2 00	1 00
toilet set .....	1 00	50
collection of 12 pieces distinct from above.....	5 00	3 00

Lot 13—Lace Work.		1st	2d
		Pre.	Pre.
Best point lace lunch cloth.....	\$3 00	\$2 00	
point lace centerpiece .....	2 00	1 00	
point lace handkerchief .....	2 00	1 00	
point lace collar and cuffs.....	2 00	1 00	
point lace or honiton, 6 dollies .....	2 00	1 00	
point lace or honiton child's bonnet.....	2 00	1 00	
point lace or honiton fichu.....	2 00	1 00	
black lace collar or fichu.....	2 00	1 00	
lace bolero .....	2 00	1 00	
honiton lace handkerchief.....	2 00	1 00	
honiton lace collar and cuffs.....	2 00	1 00	
display of lace work, distinct from above, not less than 12 pieces .....	5 00	3 00	

Lot 14—Tatting and Netted Lace Work.			
Best netted six dollies.....	\$2 00	\$1 00	
netted centerpiece .....	2 00	1 00	
display of netting, distinct from above, not less than 6 pieces .....	2 00	1 00	
tatting collar and cuffs .....	2 00	1 00	
tatting yoke .....	2 00	1 00	
tatting handkerchief .....	2 00	1 00	
article not named above .....	2 00	1 00	
tatting display, distinct from above, not less than 6 pieces .....	2 00	1 00	

## Lot 15—Old Ladies' Department.

Those competing must be over 60 years old.

Best silk patch work quilt, finished.....	\$3 00	\$1 50	
silk crazy work quilt, finished .....	4 00	2 00	
patchwork worsted quilt, finished.....	3 00	1 50	
crazy work worsted quilt, finished .....	3 00	1 50	
cotton quilt, finished .....	3 00	1 50	
solid quilting on cotton quilt.....	3 00	1 50	
knitted bed spread .....	3 00	1 50	
knitted mittens or gloves .....	1 00	50	
knitted tidy .....	1 00	50	
knitted lace, 1 yard or more .....	1 00	50	
crocheted bed spread .....	3 00	1 50	
crocheted tidy .....	1 00	50	
crocheted lace, 1 yard or more .....	1 00	50	
crocheted six dollies .....	1 00	50	
hand sewing .....	1 00	50	
hemstitching .....	1 00	50	

	1st Pre.	2d Pre.
Best patching .....	\$1 00	\$0 50
darning .....	1 00	50
buttonholes on three materials .....	1 00	50
drawn work, piece .....	2 00	1 00
satın stitch embroidery, piece .....	2 00	1 00
kensington embroidery, piece .....	2 00	1 00
hardanger, piece .....	2 00	1 00
battenberg, piece .....	2 00	1 00
point lace or honiton, piece .....	2 00	1 00
tatting, piece .....	2 00	1 00
outline embroidery, piece .....	1 00	50
sofa pillow .....	2 00	1 00
hearthrug .....	2 00	1 00
display of 12 pieces, distinct from above .....	5 00	3 00

#### Lot 16—Girls' Department.

Girls competing must be under 14 years of age.

Best dress, handmade .....	\$2 00	\$1 50
skirt, handmade .....	1 00	50
drawers, handmade .....	1 00	50
apron, handmade .....	1 00	50
3-piece underwear, distinct from above.....	1 50	1 00
toilet set, handmade .....	1 00	50
fancy tidy, handmade .....	1 00	50
pin cushion, handmade .....	1 00	50
sofa pillow, handmade .....	1 50	1 00
handkerchief, handmade .....	1 00	50
crocheted lace, 1 yard or more.....	1 00	50
crocheted tidy .....	1 00	50
dressed doll .....	2 00	1 00
embroidered piece .....	1 00	50
drawnwork piece .....	1 00	50
battenberg piece .....	1 00	50
3 dollies .....	1 00	50
outline embroidery .....	1 00	50
darning .....	1 00	50
patching .....	1 00	50
buttonholes on 3 materials.....	1 00	50
display of work, distinct from above.....	5 00	3 00

#### Lot 17—Bulgarian Work.

Best Bulgarian work .....	\$2 00	\$1 00
sofa pillow .....	2 00	1 00
table cover .....	3 00	2 00

## Lot 18—Shadow Embroidery.

## Lot 19—Discretionary.

In this lot make entries, when desired, of what is not provided for in foregoing lots in this class.

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## CLASS H—FINE ARTS.

MRS. F. M. HALL, SUPERINTENDENT.

GENTLEMEN: The exhibit made under Class H at the last state fair was superior in quality and quantity to any exhibition made since I became superintendent of Class H.

We have insisted that real merit consists in honesty of purpose and fidelity in the representation of art themes and objects both in the fine arts and in the industrial arts, since we have had both. Originality is the watchword of our endeavors in behalf of Class H. Copying is systematically discouraged.

Two years ago we added a juvenile lot. We are very much encouraged over the results of this adventure and we are led to enter another field, that of the public schools of our state, where drawing is recognized as one of the serious branches taught. We were able to procure for our last fair a very interesting exhibition of this kind of work from the Lincoln public schools. Miss Martha Pierce, instructor of drawing, was asked to make such an exhibit and she did so. The result was that the Lincoln schools were able to give an excellent object lesson along these lines. As you know, there are two methods used in teaching drawing in our public schools. One teaches the child to draw from objects and memory, and to produce conventional designs by the combination of lines and forms. The other method teaches the child to copy drawings made for him by the teacher on the black board or in drawing books. The first method is conceded to be the best, hence our desire to encourage the adoption of it in the public schools of the state.

At the last fair the Lincoln exhibition of original designs for stained glass windows, lanterns, wall paper, rugs, leather, metal work and embroidery were very good, while the water colors and crayon drawings from still life, fruit and flowers were of equal merit. This section of the exhibit attracted the attention of educators from different sections of the state, and I was encouraged to ask your Board to allow the addition of another lot under Class H, for collective public school work, to be known as Lot 10. (See premium list attached to this report.) If the above suggestion meets with your approval, I would suggest that the superintendent of Class H for next year be instructed to communicate with the ten supervisors of drawing in the state, telling them of the plan and asking them to send collective exhibits from their respective schools for the next state fair. This notification should be given as soon as the superintendent can do so.

In order to make a little broader field for the juvenile I have added a few entries to that lot.

In order to economize space in the premium list, I have made double titles for some of the divisions under several lots and I find this causes confusion, so I have arranged the list for next year, giving each medium its separate list, and have reinstated the pastel, as I have always had a few entries. I congratulate you on the success of the last fair, hoping that the coming fair may surpass it.

Respectfully submitted,

MRS. F. M. HALL.

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#### CLASS H—FINE ARTS.

All to be made and owned by citizens of the state of Nebraska.

Rule 21. When there is but one exhibitor competing for a premium, the committee may award no premium, or second or first, as merit may warrant. But in no case shall the money award exceed half that stipulated in case of competition. In non-competitive awards, committee must state in writing to the Board, in detail, the reason for awards. All non-competitive awards are subject to revision and change by the Board of Managers, or the State Board when in session: *Provided*, The Board of Managers or the State Board shall have power, in extraordinary cases, with evidence justifying, to award a full cash premium.

Articles in this class to which first premiums have heretofore been awarded by this Association will not again be eligible to competition. They will, however, be welcome to exhibition.

*Rule 25. No entrance fee will be charged exhibitors for other than speed entries. No exhibitors' tickets are sold. When not otherwise stipulated, entries and competition are open to the world.*

*No cash will be paid on discretionary classes or lots, unless on special report and recommendation of committees or experts. In all instances, however, when desired, diplomas will be issued for such exhibits.*

*No animal or article can compete for more than one premium, except in sweepstakes or county collective exhibits.*

No animal or article can compete for more than one premium, except in sweepstakes or county collective exhibits.

By original is meant drawings or paintings made from objects, figures, or studies taken directly from nature.

Professional is defined as follows: Any one who teaches and receives remuneration for the same.

Single entries can not be entered in collections.

## Lot 1—Oil Paintings.

All entries must be originals.

	Professional List.	1st Pre.	2d Pre.	3d Pre.
Best portrait from sittings.....		\$2 50	\$1 25	\$0 75
study from sittings .....		2 50	1 25	75
interior .....		2 50	1 25	75
marine .....		2 50	1 25	75
landscape .....		2 50	1 25	75
landscape with animals .....		1 50	1 00	75
study of animals .....		2 50	1 25	75
study of game .....		1 50	1 00	75
study of flowers .....		1 50	1 00	75
study of fruit .....		1 50	1 00	75
study of vegetables .....		1 50	1 00	75
study of still life .....		1 50	1 00	75
study of drapery .....		1 50	1 00	75
collection of 5 canvases .....		3 00	2 00	1 00

## Water Colors.

Best portrait from sittings.....	\$2 50	\$1 25	\$0 75
study from sittings .....	2 50	1 25	75
study of landscape .....	1 50	1 00	75
study of flowers .....	1 50	1 00	75
study of animals .....	1 50	1 00	75
study of fruit .....	1 50	1 00	75
study of vegetables .....	1 50	1 00	75
study of game .....	1 50	1 00	75
study of still life .....	1 50	1 00	75
study of interior .....	1 50	1 00	75
collection of 5 pieces .....	2 50	1 25	75

## Charcoal.

Best portrait from sittings .....	\$2 50	\$1 25	\$0 75
study from sittings .....	2 50	1 25	75
study of landscape .....	1 50	1 00	75
study of flowers .....	1 50	1 00	75
study of animals .....	1 50	1 00	75
study of fruit .....	1 50	1 00	75
study of vegetables .....	1 50	1 00	75
study of game .....	1 50	1 00	75
study of still life .....	1 50	1 00	75
study of interior .....	1 50	1 00	75
collection of 5 pieces .....	2 50	1 25	75

	Pastel.	1st Pre.	2d Pre.	3d Pre.
Best portrait from sittings .....		\$2 50	\$1 25	\$0 75
study from sittings .....		2 50	1 25	75
study of landscape .....		2 50	1 25	75
study of flowers .....		2 50	1 25	75
study of animals .....		2 50	1 25	75
study of fruit .....		2 50	1 25	75
study of vegetables .....		2 50	1 25	75
study of game .....		2 50	1 25	75
study of still life .....		2 50	1 25	75
study of interior .....		2 50	1 25	75
collection of 5 pieces .....		2 50	1 25	75

## Pen and Ink.

Best portrait from sittings .....	\$2 50	\$1 25	\$0 75
study from sittings .....	2 50	1 25	75
study of landscape .....	2 50	1 25	75
study of flowers .....	2 50	1 25	75
study of animals .....	2 50	1 25	75
study of fruit .....	2 50	1 25	75
study of vegetables .....	2 50	1 25	75
study of game .....	2 50	1 25	75
study of still life .....	2 50	1 25	75
study of interior .....	2 50	1 25	75
collection of 5 pieces .....	2 50	1 25	75

## Lot 2—Oil Paintings.

All entries must be originals.

## Amateur List.

Best portrait from sittings .....	\$1 00	\$0 75	\$0 50
study from sittings .....	1 00	75	50
interior .....	1 00	75	50
marine .....	1 00	75	50
landscape .....	1 00	75	50
landscape with animals .....	1 00	75	50
study of animals .....	1 00	75	50
study of game .....	1 00	75	50
study of flowers .....	1 00	75	50
study of fruit .....	1 00	75	50
study of vegetables .....	1 00	75	50
study of still life .....	1 00	75	50
study of drapery .....	1 00	75	50
collection of 5 canvases .....	2 00	1 00	50

## Water Colors.

All entries must be matted or framed.

	1st Pre.	2d Pre.	3d Pre.
Best portrait from sittings.....	\$1 00	\$0 75	\$0 50
study from sittings.....	1 00	75	50
landscape .....	75	50	25
flowers .....	75	50	25
animals .....	75	50	25
fruit .....	75	50	25
vegetables .....	75	50	25
still life .....	75	50	25
interior .....	75	50	25
collection of 5 pieces.....	1 25	75	50

## Pastel.

All entries must be matted or framed.

Best portrait from sittings.....	\$1 00	\$0 75	\$0 50
study from sittings.....	1 00	75	50
landscape .....	75	50	25
flowers .....	75	50	25
animals .....	75	50	25
fruit .....	75	50	25
vegetables .....	75	50	25
still life .....	75	50	25
interior .....	75	50	25
collection of 5 pieces.....	1 25	75	50

## Charcoal.

All entries must be matted or framed.

Best portrait from sittings.....	\$1 00	\$0 75	\$0 50
study from sittings.....	75	50	25
landscape .....	75	50	25
flowers .....	75	50	25
animals .....	75	50	25
fruit .....	75	50	25
vegetables .....	75	50	25
still life .....	75	50	25
interior .....	75	50	25
collection of 5 pieces.....	1 25	75	50

## Pencil.

All entries must be matted or framed.

Best portrait from sittings.....	\$1 00	\$0 75	\$0 50
study from sittings.....	75	50	25
landscape .....	75	50	25
flowers .....	75	50	25



	1st Pre.	2d Pre.	3d Pre.
Best animals .....	\$0 75	\$0 50	\$0 25
fruit .....	75	50	25
vegetables .....	75	50	25
still life .....	75	50	25
interior .....	75	50	25
collection of 5 pieces.....	1 00	75	50

## Pen and Ink.

All entries must be matted or framed.

Best portrait from sittings.....	\$1 00	\$0 75	\$0 50
study from sittings.....	75	50	25
landscape .....	75	50	25
flowers .....	75	50	25
animals .....	75	50	25
fruit .....	75	50	25
vegetables .....	75	50	25
still life .....	75	50	25
interior .....	75	50	25
collection of 5 pieces.....	1 00	75	50

## Lot 3—Juvenile List.

Boys and girls under 15 years of age belong in this class.

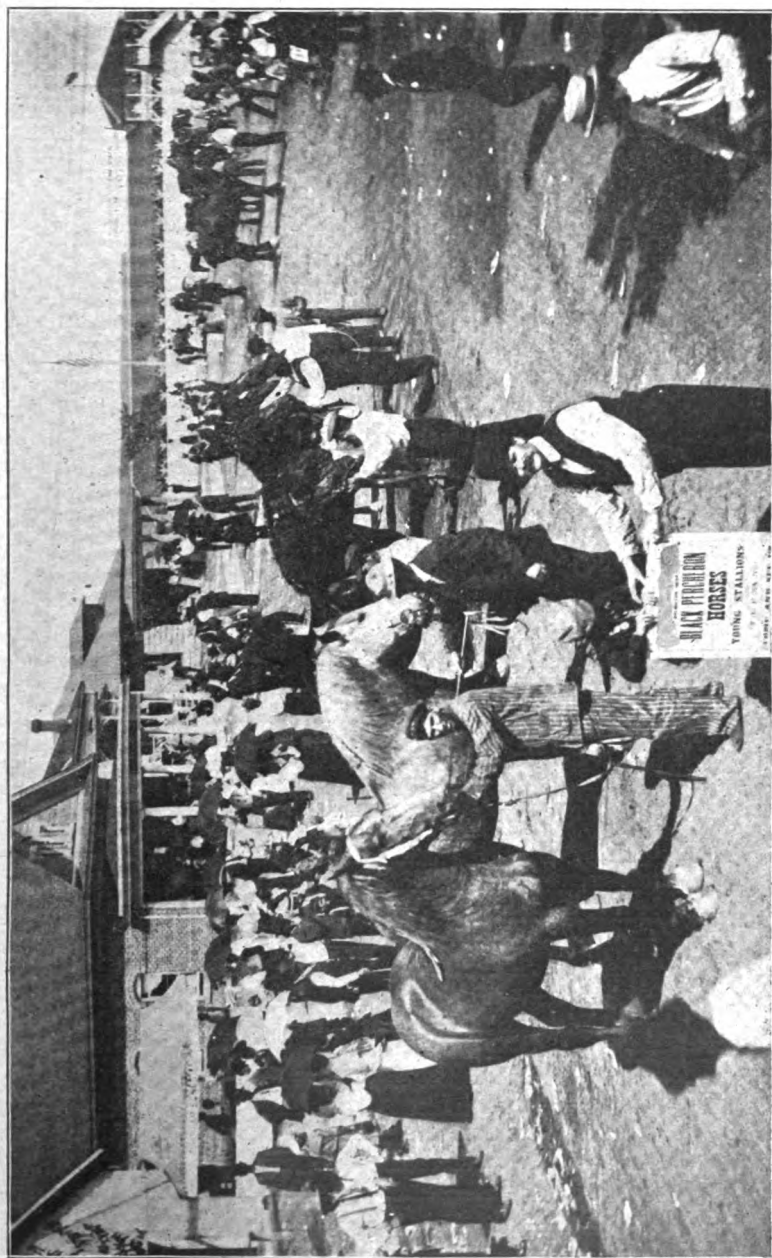
All entries must originals.

All entries must be matted.

	1st Pre.	2d Pre.
Best flowers .....	\$0 50	\$0 25
fruit .....	50	25
still life .....	50	25
sketch from life .....	50	25
landscape .....	50	25
vegetables .....	50	25
cover design for book .....	50	25
conventional design from nature .....	50	25
conventional design from still life .....	50	25
collection of 6 pieces .....	1 00	50

## Crayon.

Best sketch from life .....	\$0 50	\$0 25
drawing from cast .....	50	25
drawing from still life .....	50	25
drawing from fruit .....	50	25
drawing from flowers .....	50	25
drawing from vegetables .....	50	25
drawing from animals .....	50	25



LIVE STOCK PARADE, 1906 STATE FAIR.

	1st Pre.	2d Pre.
Best color scheme.....	\$0 50	\$0 25
design for lantern .....	50	25
collection of 6 pieces .....	1 00	50

## Pencil.

Best flowers .....	\$0 50	\$0 25
fruit .....	50	25
still life .....	50	25
sketch from life .....	50	25
landscape .....	50	25
vegetables .....	50	25
line composition .....	50	25
composition for metal work .....	50	25
composition for leather work .....	50	25
collection of 6 pieces.....	1 00	50

## Lot 4—China Painting or Ceramics.

## Professional List.

Best jardinier .....	\$2 50	\$1 50
punch bowl .....	2 50	1 50
rose bowl .....	2 50	1 50
fern bowl .....	2 00	1 00
nut bowl .....	2 00	1 00
large vase .....	2 00	1 00
small vase .....	1 00	50
shaving mug .....	75	50
box .....	75	50
bon bon .....	1 00	50
tankard .....	2 00	1 00
pitcher .....	2 00	1 00
stein .....	1 00	50
cream and sugar .....	2 00	1 00
plaque .....	2 00	1 00
comb and brush tray .....	2 00	1 00
chop plate .....	2 00	1 00
half dozen plates.....	2 00	1 00
plate conventional .....	1 50	75
plate with figure .....	2 00	1 00
plate with flowers .....	1 00	50
cup and saucer .....	1 00	50
half dozen cups and saucers .....	2 00	1 00
half dozen ramekins .....	2 00	1 00
sugar shake .....	50	25
salad set .....	2 50	1 50

	1st Pre.	2d Pre.
Best berry set.....	\$2 50	\$1 50
ice cream set .....	2 50	1 50
fish set .....	2 50	1 50
dresser set, not less than 5 pieces .....	2 50	1 50
specimen raised paste .....	1 50	75
specimen enamel .....	1 50	75
specimen jewel work .....	1 50	75
specimen raised gold on glass .....	1 50	75
specimen raised gold and enamel on glass.....	1 50	75
figure piece .....	2 50	1 50
hair receiver .....	1 00	50
violet holder .....	1 00	50
hatpin holder .....	1 00	50
pin tray .....	1 00	50
hairpin bowl .....	1 00	50
candlestick .....	1 00	50
cheese plate .....	75	50
half dozen bread and butter plates.....	2 50	1 50
cake plate .....	2 00	1 00
tobacco jar .....	1 50	1 00
scent bottle .....	1 00	75
collection 6 pieces .....	2 50	2 00

## Lot 5—China Painting or Ceramics.

	Amateur List.	1st Pre.	2d Pre.	3d Pre.
Best chop plate.....		\$1 50	\$1 00	\$0 50
pin tray .....		75	50	25
celery tray .....		1 00	75	35
comb and brush tray.....		1 00	75	35
spoon tray .....		75	50	25
pen tray .....		75	50	25
hair receiver .....		75	50	25
plate .....		75	50	25
cup and saucer.....		1 00	75	35
cream and sugar .....		1 50	1 00	50
salt and pepper.....		75	50	25
bouillon cup and saucer.....		1 50	1 00	50
pitcher .....		1 00	75	35
stein .....		1 00	75	35
mug .....		75	50	25
sugar shake .....		75	50	25
cake plate .....		1 00	75	—
tobacco jar .....		75	50	—

	1st Pre.	2d Pre.	3d Pre.
Best scent bottle.....	\$0 75	\$0 50	—
bowl .....	75	50	\$0 25
bon bon .....	1 00	75	35
small vase .....	1 00	75	35
nut bowl .....	1 50	1 00	50
rose bowl .....	1 00	75	35
toothpick holder .....	75	50	25
set buttons .....	75	50	25
dresser set, 3 pieces.....	1 50	1 00	50
ramekin .....	1 00	75	35
specimen raised paste.....	1 00	75	35
specimen enamel .....	1 00	75	35
specimen jewel work .....	1 00	75	35
hatpin holder .....	75	50	25
bread and butter plate.....	75	50	25
ring rack .....	75	50	25
hatpin box .....	75	50	25
violet holder .....	75	50	25
candlestick .....	75	50	25
powder box .....	75	50	25
jewel box .....	75	50	25
collection of 5 pieces.....	1 50	1 00	50

## Lot 6—Photography.

## Professional List.

	1st Pre.	2d Pre.
Best portrait .....	\$0 50	\$0 25
landscape .....	50	25
landscape and figures.....	50	25
landscape and animals.....	50	25
interior .....	50	25
marine .....	50	25
flowers .....	50	25
baby .....	50	25
animal .....	50	25
still life .....	50	25
collection of 5 views.....	1 00	50

## Amateur List.

portrait .....	40	20
landscape .....	40	20
landscape with figures.....	40	20
landscape with animals.....	40	20
interior .....	40	20
marine .....	40	20

	1st Pre.	2d Pre.
Best flowers .....	\$0 40	\$0 20
baby .....	40	20
animal .....	40	20
still life .....	40	20
collection 5 views.....	80	40

## Lot 7—Wood Carving.

Best conventional design and execution of the same.

Best cabinet .....	\$3 00	\$1 50
table .....	3 00	1 50
tabouret .....	2 00	1 00
shirt waist box .....	3 00	1 50
basket .....	2 00	1 00
candlestick .....	1 00	50
panel .....	1 00	50
picture frame .....	1 00	50
picture and frame .....	1 00	50
book rack .....	1 00	50
plate rack .....	1 00	50
bread board .....	50	25
foot stool .....	1 00	50
hat rack .....	1 00	50
hall seat .....	2 00	1 00
mirror .....	1 00	50
collar and cuff box.....	1 00	50
handkerchief box .....	1 00	50
glove box .....	1 00	50
tie box .....	1 00	50
paper knife .....	50	25
stein rack .....	1 00	50
nut bowl .....	50	25

## Pyrography.

Best conventional design and execution of the same.

Best cabinet .....	\$3 00	\$1 50
table .....	3 00	1 50
tabouret .....	2 00	1 00
shirt waist box .....	3 00	1 50
basket .....	2 00	1 00
candlestick .....	1 00	50
panel .....	1 00	50
picture frame .....	1 00	50
picture and frame .....	1 00	50
book rack .....	1 00	50

	1st Pr.	2d Pr.
Best plate rack.....	\$1 00	\$0 50
bread board .....	50	25
foot stool .....	1 00	50
hat rack .....	1 00	50
hall seat .....	2 00	1 00
mirror .....	1 00	50
collar and cuff box .....	1 00	50
handkerchief box .....	1 00	50
glove box .....	1 00	50
tie box .....	1 00	50
paper knife .....	50	25
stein rack .....	1 00	50
nut bowl .....	50	25

## Lot 8—Raffia and Willow Baskets.

Best clothes hamper .....	\$1 00	\$0 50
waste paper basket .....	1 00	50
sewing basket .....	1 00	50
card basket .....	1 00	50
spool basket .....	50	25
shopping bag .....	1 00	50
jardinier .....	1 00	50
fan .....	50	25
collection of 5 pieces .....	2 00	1 00

## Lot 9—Bead Work.

Best watch chain, strung .....	\$1 00	\$0 50
watch chain, woven .....	1 00	50
watch fob, strung .....	1 00	50
watch fob, woven .....	1 00	50
wrist bag .....	1 00	50
chatelaine bag .....	1 00	50
belt, strung .....	1 00	50
belt, woven .....	1 00	50
purse .....	1 00	50
coin purse .....	1 00	50
bracelet, woven .....	1 00	50
tobacco pouch .....	1 00	50
slippers .....	1 00	50
collection of 5 pieces .....	2 00	1 00

## Lot 10—Collective Exhibits of Public Schools.

All work must be original. All entries must be properly matted.

	Water Colors	1st Pre.	2d Pre.	3d Pre.
Best collection of 6 water colors from still life.....		\$2 00	\$1 50	\$1 00
collection of 6 water colors from flowers or plants .....		2 00	1 50	1 00
collection of 6 water colors from memory sketches		2 00	1 50	1 00
collection of 6 water colors from fruit.....		2 00	1 50	1 00
class exercise .....		2 00	1 50	1 00

## Crayon or Pencil.

Best collection of 6 drawings from still life.....	\$2 00	\$1 50	\$1 00
collection of 6 drawings from flowers or plants..	2 00	1 50	1 00
collection of 6 drawings from fruit.....	2 00	1 50	1 00
collection of 6 drawings from memory.....	2 00	1 50	1 00
class exercise .....	2 00	1 50	1 00

## To be Made in Any Medium.

Best collection of 6 designs for stain glass window..	\$2 00	\$1 50	\$1 00
collection of 6 designs for lantern.....	2 00	1 50	1 00
collection of 6 designs for carpet.....	2 00	1 50	1 00
collection of 6 designs for wall paper.....	2 00	1 50	1 00
collection of 6 designs for rug.....	2 00	1 50	1 00
collection of 6 designs for leather work.....	2 00	1 50	1 00
collection of 6 designs for metal.....	2 00	1 50	1 00
collection of 6 designs in clay.....	2 00	1 50	1 00
collection of 6 pieces of finished pottery.....	2 00	1 50	1 00
collection of 6 designs line composition.....	2 00	1 50	1 00
collection of 6 cover designs.....	2 00	1 50	1 00
collection of 6 color schemes.....	2 00	1 50	1 00
collection of 6 conventional designs from nature..	2 00	1 50	1 00
collection of 6 conventional designs from still life .....	2 00	1 50	1 00
collection from any school.....	15 00	10 00	5 00

## Lot 11—Discretionary.

In this lot make entries, when desired, of what is not provided for in foregoing lots in this class.



## CLASS I—DAIRY.

G. R. WILLIAMS, SUPERINTENDENT LOTS 1 TO 7 INCLUSIVE.

BENSON, NEBR., November 15, 1906.

*To the President and Board of Managers of the Nebraska State Agricultural Society:*

GENTLEMEN: As superintendent of Class I, I herewith tender you my report for the year 1906.

It is to be regretted that the dairymen of our state do not take the interest and pride in exhibiting their goods that the dairy products of Nebraska deserve. There were only seven entries of butter and eight of cheese entered for premiums, all of which were very meritorious samples. I should add that the Beatrice Creamery Company made an elegant display of their goods, and the attraction drew at least twenty thousand people who seemed to be very much pleased. But it must be admitted that the society's building is too small and inadequate for the display of the dairy products of Nebraska or even any one of the dairy counties of our state. I would recommend that a dairy building be provided to meet the growing importance of this valuable industry. Also, that ample premiums be offered the small dairies as well as the larger manufacturers. All of which is respectfully submitted.

G. R. WILLIAMS.

## CLASS I.

MRS. M. M. PRESSON, SUPERINTENDENT CLASSES 8 TO 12.

*Hon. W. R. Mellor, Secretary State Board of Agriculture:*

DEAR SIR: Your favor dated September 10 received requesting an outlined report of my work as superintendent of Class I.

I will state that some needed improvements can be made to the building to make the work much more satisfactory to exhibitors and those who have the work in hand. I believe your first assistant is authority for the fact that it was the largest number of exhibits ever entered in this class at a state fair. The quality was surely a success, and I found the expert judge very competent and conscientious in her work. A large number of people viewed the exhibit during the fair and more doubtless would have, had space permitted. The Board of Managers gave myself and the ladies assisting me every needed attention, for which they have my heartiest thanks, and I congratulate you upon the most successful fair in the history of our own great state.

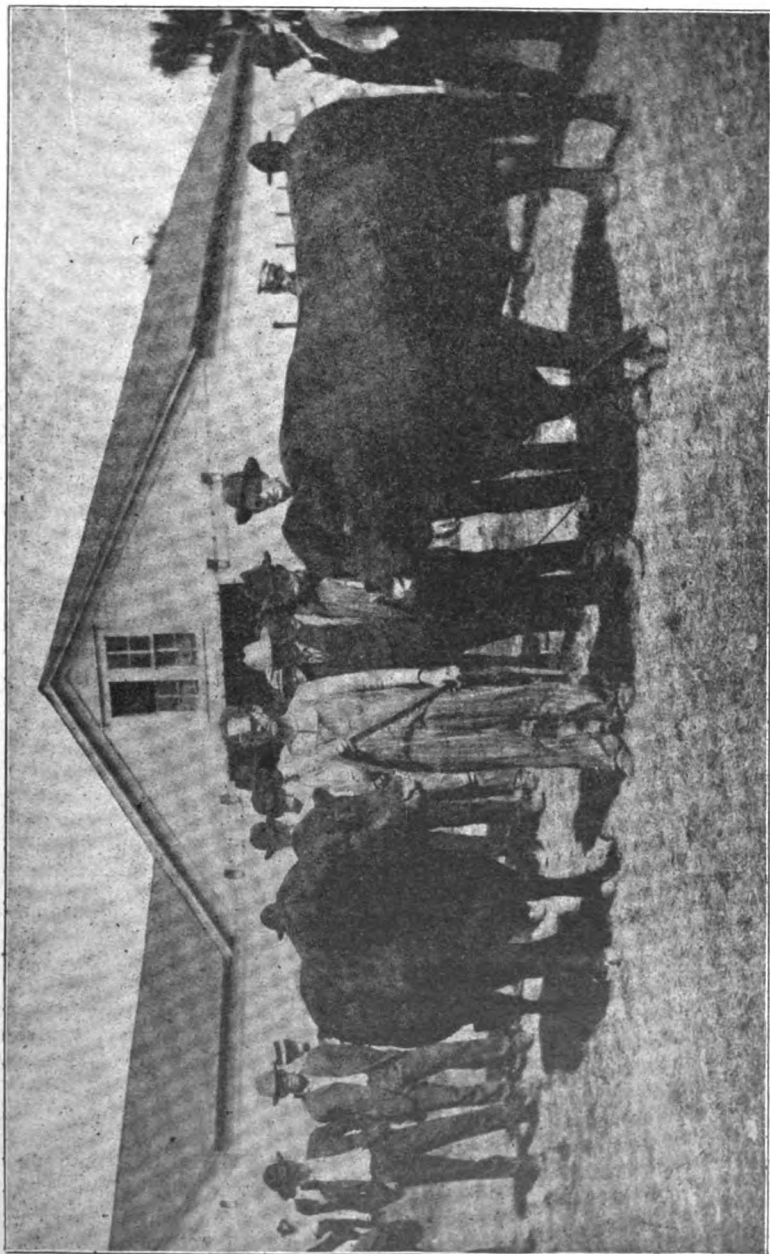
Very truly,

M. M. PRESSON.

## CLASS I—TEST OF DAIRY COWS.

MERLE LITTLE, JUDGE.

The cows entered in this competition, although placed under Class B, cattle, were in charge of and under the management of the superintendent



**TYPES OF PREMIUM WINNERS.**

of Class I, G. R. Williams. The rules which governed the test were as follows:

Any and all thoroughbred cows are eligible to compete.

Cow to be kept at option of owner, and may be milked not to exceed three times a day, but shall be fed, watered, and cared for, and tested under the supervision of a committee appointed by the State Board of Agriculture.

Time of test, two days, commencing Wednesday, September 5. Statement to be furnished by the owner, containing age and time of calving.

The award shall be made on the value of the milk product for dairy purposes; the percentages of butter fat in the milk to be determined by scientific tests; the butter fat to have an estimated value of twenty-five cents per pound, the skimmed milk an estimated value of fifteen cents per hundred pounds.

The milk product of the cows competing in this lot shall be the property of the State Board of Agriculture, to be used in illustrations in connection with the work of the Dairy Department.

Many public tests have been made of dairy cows to determine their relative merits. In many of these there has been complaint that the basis on which awards were made was not fair to the different breeds contesting. Although it was not the intention of the Nebraska State Fair management to conduct a test of breeds, it was imperative that the method of apportioning the awards should be equally just to each individual in the trial regardless of breed. The method at Nebraska's fair has been used several years and has always given satisfaction. The age of the animal, type, feed eaten and time since calving were not taken into consideration. These points are especially desirable to know, as they materially affect production, but the feed eaten cannot be easily determined in a test of so short duration; the effect of age would be difficult to take into account, and other points that we might consider would necessitate a too difficult plan of judging. The point in view in holding the contest was to bring together a number of good milk cows irrespective of breed in order that the people of the state might have a chance to see pure-bred dairy cows and watch their performance.

As nearly all milk in this state is sold according to its butter-fat content and the skim-milk is fed at home, a plan was adopted wherein these two constituents should figure. Butter-fat was valued at twenty-five cents per pound, a price generally prevailing in September for a good fat, and skim-milk at fifteen cents per one hundred pounds, a valuation made by the experiment station.

#### THE ANIMALS TESTED.

Twelve cows were entered in the contest; eight Holsteins and four Jerseys. The breeders who exhibited in this lot were C. F. Stone, Peabody, Kansas, Holsteins; John C. Doubt, Havelock, Nebr., Holsteins; H. C. Glissman, Omaha, Nebr., Holsteins, and H. C. Young, Lincoln, Jerseys.

The change of the cows from their homes to the fair grounds incapacitated them from doing their best. Nearly every cow in the test was off feed during the entire test, which was quite detrimental to performance.

Two lists of premiums were given, one for aged cows and one for heifers. This divided the animals so that seven aged cows and five heifers competed. The cows were milked out, beginning at 5:30 o'clock Tuesday evening, at 5 Wednesday morning, at 12 Wednesday noon and at as near these same hours as possible during the remainder of the test, care being taken to obtain the milk from each cow for just forty-eight hours. A sample of the milk from each cow at each milking was taken, together with the weight of the milk. These samples were taken to the Experiment Station laboratories and analyzed. The results of the test, together with the history of the cows and other data are given in the accompanying tables.

It is especially interesting to note the variations in the amount of milk given and the per cent of fat in it from milking to milking. The lack of uniformity shown here is undoubtedly due to the excitement and disquietude caused by the changed and noisy surroundings and different feed. The test was not fair to the cows because they could not do their best under such conditions, but it was valuable to the thousands of people who had a chance to see the animals and watch their performance.

MERLE LITTLE, Conductor of Test.

*History and Record of Aged Cows.*

Name and Number of Cow	Breed	Age	Days Since Calving	Milk	Test	Butter-fat	Skim-milk	Value of Product	Premium Number
Maryke 3d's G. 4th 54935....	Holstein	6 yrs., 8 mos.	20 days	125.2	2.69	3.374	121.8	\$1.026	1
Maid Henry .....	Holstein	6 yrs., 6 mos.	60 days	113.4	2.73	3.101	110.3	0.930	2
Rioters Ona. ....	Jersey	6 yrs., 1 mos.	35 days	61.4	4.41	2.712	58.7	0.766	3
Cora Posie .....	Holstein	4 yrs., 11 mos.	24 days	89.8	2.68	2.411	87.4	0.734	4
Lillie Henry .....	Holstein	6 yrs., 5 mos.	14 days	73.3	2.80	2.963	71.3	0.623	5
Lassie Easter Pogis .....	Jersey	7 yrs., 7 mos.	70 days	49.1	4.42	2.168	47.0	0.612	6
Sharon Countess .....	Holstein	3 yrs., 11 mos.	11 days	61.4	3.13	1.926	59.5	0.588	7

*History and Record of Heifer Class.*

Name and Number of Animal	Breed	Age	Days Since Calving	Milk	Test	Butter-fat	Skim-milk	Value of Product	Premium Number
Ducky Darling .....	Jersey	2 yrs., 11 mos.	35 days	53.6	4.29	2.301	51.3	\$0.652	1
Francis Gerken H. ....	Holstein	2 yrs., 11 mos.	60 days	61.9	3.23	2.005	60.2	0.594	2
Princess Pet Dekol. ....	Holstein	2 yrs., 8 mos.	13 days	77.5	2.24	1.741	75.8	0.549	3
Boujle's Marigold .....	Jersey	2 yrs., 0 mos.	65 days	47.1	3.63	1.710	45.4	0.497	4
Parthena Mercedes .....	Holstein	2 yrs., 9 mos.	152 days	42.4	2.51	1.124	41.3	0.344	5

**MARYKE 3D'S GERBEN 4TH 54935—HOLSTEIN.**

Owned by C. F. Stone, Peabody, Kan. First in Class B, Lot 10, aged cows.  
Dropped December 29, 1899. Calved August 15, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept 5, morning..	5.15	30.1	2.3	.692	.....	.....	.....	.....
Sept. 5, noon.....	12.00	17.8	2.6	.463	.....	.....	.....	.....
Sept. 5, evening..	6.10	14.4	2.5	.360	.....	.....	.....	.....
Sept. 6, morning..	5.15	27.6	3.5	.966	.....	.....	.....	.....
Sept. 6, noon.....	12.00	19.4	2.8	.543	.....	.....	.....	.....
Sept. 6, evening..	6.10	15.9	2.2	.350	.....	.....	.....	.....
48 hours.....	....	125.2	2.69	3.374	\$0.843	121.8	\$0.183	\$1.026

**MAID HENRY 54878—HOLSTEIN.**

Owned by J. C. Doubt, Havelock, Neb. Second in Class B, Lot 10, Aged Cows. Dropped, March 2, 1900. Calved, July 6, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	7.10	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	7.20	27.1	2.2	.596	\$0.149	.....	.....	.....
Sept. 5, noon.....	12.50	15.0	3.8	.570	0.142	.....	.....	.....
Sept. 5, night ...	7.10	16.3	2.4	.391	0.098	.....	.....	.....
Sept. 6, morning..	7.20	26.7	2.3	.609	0.151	.....	.....	.....
Sept. 6, noon. ....	12.50	13.8	3.9	.538	0.134	.....	.....	.....
Sept. 6, night ....	7.10	13.7	2.9	.397	0.099	.....	.....	.....
48 hours.....	.. ..	113.4	2.73	3.101	\$0.775	110.3	\$0.165	\$0.94

**RIOTERS ONA 16218—JERSEY.**

Owned by H. C. Young, Lincoln, Neb. Third in Class B, Lot 10, Aged Cows. Dropped, August 10, 1900. Calved, August 1, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	5.30	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	6.00	16.0	4.3	.588	\$0.147	.....	.....	.....
Sept. 5, evening..	5.30	13.7	5.0	.685	0.171	.....	.....	.....
Sept. 6, morning..	6.00	16.4	4.2	.689	0.172	.....	.....	.....
Sept. 6, evening..	5.30	15.3	4.9	.750	0.188	.....	.....	.....
48 hours.....	.....	61.4	4.41	2.712	\$0.678	58.7	\$0.088	\$0.766

## CORA POSIE 64164—HOLSTEIN.

Owned by H. C. Glissman, Omaha, Neb. Fourth in Class B, Lot 10, Aged Cows. Dropped November 1, 1901. Calved August 11, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	7.30	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	7.20	23.2	2.5	.582	\$0.145	.....	.....	.....
Sept. 5, noon.....	12.30	7.7	3.1	.239	0.060	.....	.....	.....
Sept. 5, evening..	7.30	13.8	3.0	.414	0.104	.....	.....	.....
Sept. 6, morning..	7.20	22.1	2.8	.619	0.155	.....	.....	.....
Sept. 6, noon.....	12.30	9.5	3.4	.323	0.081	.....	.....	.....
Sept. 6, evening..	7.30	13.5	2.4	.234	0.058	.....	.....	.....
48 hours.....	.....	89.8	2.68	2.411	\$0.603	87.4	\$0.131	\$0.734

## LILLIE HENRY 55093—HOLSTEIN.

Owned by H. C. Glissman, Omaha, Neb. Fifth in Class B, Lot 10, Aged Cows. Dropped April 26, 1900. Calved August 21, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	7.40	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	7.30	19.1	2.6	.497	\$0.124	.....	.....	.....
Sept. 5, noon.....	12.35	7.2	3.6	.259	0.065	.....	.....	.....
Sept. 5, evening..	7.40	11.0	2.6	.286	0.071	.....	.....	.....
Sept. 6, morning..	7.30	18.1	2.4	.434	0.108	.....	.....	.....
Sept. 6, noon.....	12.35	7.0	3.7	.259	0.065	.....	.....	.....
Sept. 6, evening..	7.40	10.9	2.9	.316	0.079	.....	.....	.....
48 hours.....	.....	73.3	2.80	2.053	\$0.513	71.3	\$0.107	\$0.620

## LASSIE EASTER POGIS 143523—JERSEY.

Owned by H. C. Young, Lincoln, Neb. Sixth in Class B, Lot 10, Aged Cows. Dropped February 13, 1899. Calved June 26, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	5.20	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	5.50	13.0	5.1	.663	\$0.166	.....	.....	.....
Sept. 5, evening..	5.20	11.6	4.7	.545	0.136	.....	.....	.....
Sept. 6, morning..	5.50	13.1	3.5	.458	0.114	.....	.....	.....
Sept. 6, evening..	5.20	11.4	4.4	.502	0.125	.....	.....	.....
48 hours.....	.....	49.1	4.42	2.168	\$0.542	47.0	\$0.070	\$0.612

## SHARON COUNTESS 61180—HOLSTEIN.

Owned by J. C. Doubt, Havelock, Neb. Seventh in Class B, Lot 10, Aged Cows. Dropped October 20, 1902. Calved August 24, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	7.30	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	7.20	17.2	2.9	.499	\$0.125	.....	.....	.....
Sept. 5, noon....	1.00	8.8	3.3	.290	0.072	.....	.....	.....
Sept. 5, evening..	7.30	8.3	3.1	.257	0.064	.....	.....	.....
Sept. 6, morning..	7.20	11.7	2.6	.356	0.069	.....	.....	.....
Sept. 6, noon....	1.00	7.1	3.8	.272	0.068	.....	.....	.....
Sept. 6, evening..	7.30	9.0	2.8	.252	0.063	.....	.....	.....
48 hours.....	.....	61.4	3.13	1.926	\$0.481	59.5	\$0.069	\$0.57

## DUCKY DARLING 183058—JERSEY.

Owned by H. C. Young, Lincoln, Neb. First in Class B, Lot 10, Heifers. Dropped September 13, 1903. Calved August 1, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	5.40	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	6.00	14.0	3.7	.518	\$0.129	.....	.....	.....
Sept. 5, evening..	5.40	12.6	4.0	.504	0.126	.....	.....	.....
Sept. 6, morning..	6.00	14.6	4.5	.659	0.165	.....	.....	.....
Sept. 6, evening..	5.40	12.4	5.0	.620	0.155	.....	.....	.....
48 hours.....	.....	53.6	4.29	2.301	\$0.575	51.3	\$0.077	\$0.652

## FRANCIS GERBER HENGERSVELD 72118—HOLSTEIN.

Owned by J. C. Doubt, Havelock, Neb. Second in Class B, Lot 10, Heifers. Dropped September 19, 1903. Calved July 6, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	7.00	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	7.00	15.9	3.3	.525	\$0.131	.....	.....	.....
Sept. 5, noon....	12.40	6.6	3.8	.251	0.063	.....	.....	.....
Sept. 5, evening..	7.00	7.6	2.7	.205	0.051	.....	.....	.....
Sept. 6, morning..	7.00	18.8	3.0	.564	0.141	.....	.....	.....
Sept. 6, noon....	12.40	6.2	3.7	.229	0.057	.....	.....	.....
Sept. 6, evening..	7.00	6.8	3.4	.231	0.058	.....	.....	.....
48 hours.....	.....	61.9	3.31	2.005	\$0.501	60.2	\$0.090	\$0.594



## PRINCESS PET DE KOL 71141—HOLSTEIN.

Owned by C. F. Stone, Peabody, Kan. Third in Class B, Lot 10, Heifers.  
Dropped January 14, 1904. Calved August 22, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	6.20	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	5.30	19.1	2.1	.401	\$0.100	.....	.....	.....
Sept. 5, noon.....	12.10	11.2	2.3	.258	0.064	.....	.....	.....
Sept. 5, evening..	6.20	10.0	2.2	.220	0.054	.....	.....	.....
Sept. 6, morning..	5.30	16.9	2.7	.456	0.114	.....	.....	.....
Sept. 6, noon.....	12.10	10.6	2.0	.212	0.053	.....	.....	.....
Sept. 6, evening..	6.20	9.7	2.0	.194	0.048	.....	.....	.....
48 hours.....	.....	77.5	2.24	1.741	\$0.435	75.8	\$0.114	\$0.549

## BOUJIE'S MARIGOLD 185785—JERSEY.

Owned by H. C. Young, Lincoln, Neb. Fourth in Class B, Lot 10, Heifers.  
Dropped September 25, 1904. Calved July 1, 1906.

*Record for Two Consecutive Days by Milkings.*

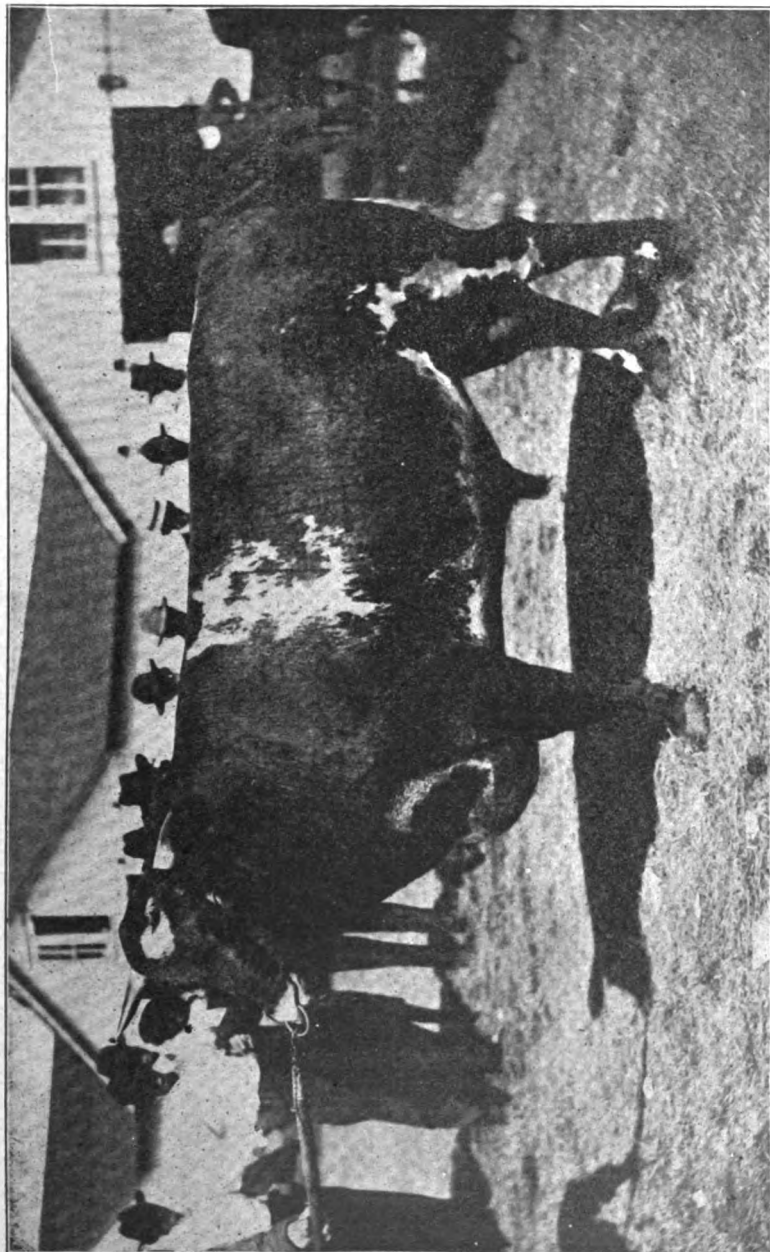
DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	5.50	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	6.10	12.6	3.6	.454	\$0.113	.....	.....	.....
Sept. 5, evening..	5.50	10.9	3.5	.381	0.095	.....	.....	.....
Sept. 6, morning..	6.10	12.4	3.7	.459	0.115	.....	.....	.....
Sept. 6, evening..	5.50	11.2	3.8	.426	0.106	.....	.....	.....
48 hours.....	.....	47.1	3.65	1.710	\$0.429	45.4	\$0.068	\$0.497

## PARTHENIA MERCEDES 2D 73656—HOLSTEIN.

Owned by C. F. Stone, Peabody, Kan. Fifth in Class B, Lot 10, Heifers.  
Dropped December 15, 1903. Calved April 5, 1906.

*Record for Two Consecutive Days by Milkings.*

DATE	Hour	Milk	Test	Butter-fat	Value at 25c per pound	Skim-milk	Value	Total Value of Product
Sept. 4, evening..	6.10	.....	.....	.....	.....	.....	.....	.....
Sept. 5, morning..	5.15	8.9	2.5	.222	.....	.....	.....	.....
Sept. 5, noon.....	12.00	6.0	2.4	.141	.....	.....	.....	.....
Sept. 5, evening..	6.10	5.3	2.1	.111	.....	.....	.....	.....
Sept. 6, morning..	5.15	10.2	4.1	.418	.....	.....	.....	.....
Sept. 6, noon.....	12.00	6.2	1.8	.111	.....	.....	.....	.....
Sept. 6, evening..	6.10	5.8	2.1	.121	.....	.....	.....	.....
48 hours.....	.....	42.4	2.51	1.124	\$0.281	41.3	\$0.062	\$0.344



A SHORTHORN PREMIUM WINNER AT 1906 STATE FAIR.

## CLASS J—EDUCATIONAL.

E. C. BISHOP, SUPERINTENDENT.

*Mr. W. R. Mellor, Sec'y State Board of Agriculture, Lincoln, Nebr.:*

DEAR SIR: Enclosed herewith find report of Class J, Educational, and of appropriations made for the Nebraska corn contest and convention, 1906.

For the educational exhibit for the next year I submit the following recommendations:

First. If possible, sufficient space shall be granted so that exhibits will not have to be placed so high on the walls that state fair visitors cannot examine them. Many of our best exhibits this year were, from lack of space, placed so high that they could not be examined in a satisfactory manner by visitors.

Second. If sufficient space cannot be granted for properly placing exhibits representing so many branches of school work, I suggest that a number of departments of exhibits be reduced in accordance with the amount of space available.

Third. An educational exhibit should be properly shown to be appreciated. The great expense of cleaning out the building and making it presentable each year is not in the line of economy. I recommend that steps be taken to properly fit and equip a building or space in a building for the educational exhibit so that the expense of preparation for the exhibit will not need to recur each year.

Fourth. In order that our school people may properly prepare and preserve work for the educational exhibit, it is necessary that they know early in the year what work is to be exhibited. If pamphlets giving announcement of the educational exhibit could be sent to our school people before the close of the winter term of school, it would enable them to much better prepare a creditable exhibit.

Fifth. The increased amount expended in the educational exhibit the past year resulted in a much larger and better exhibit than that of the year previous. I recommend your continued generosity in providing liberally for the educational exhibit.

Very truly yours,

E. C. BISHOP, Superintendent Class J, Educational.

LINCOLN, NEBR., JANUARY 5, 1907.

To prizes awarded, Nebraska state fair, August 29 to September

7, 1906, as per attached report.....\$310 00

To prize fund, Nebraska corn contest and convention, as per at-

tached report .....\$200 00

## GENERAL EXPENDITURES.

Mar. 5, Harry Porter, 4 record books.....	\$2 00
April 24, Griswold Seed Co., seeds.....	1 00
24, Griswold Seed Co., seeds.....	50
25, Postage, corn sent to contestants.....	35 00

# REPORT OF ANNUAL MEETING.

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May	1, Mabel Wythers, office work.....	4 00
	1, May Powell, office work.....	1 75
	1, Caroline Owen, office work.....	60
	1, Adams Express Co., express on potatoes.....	32 51
	4, Hammond & Stevens Co., 1000 clasped envelopes.....	10 00
	5, Mabel Wythers, office work.....	90
June	7, Adams Express Co.....	1 05
	18, Lincoln Transfer Co.....	1 40
July	20, Lottie Kochendarfer, office work.....	4 50
Aug.	7, Lincoln Sign Works, (bill of last year).....	1 00
	10, Alma Hamilton, office work.....	2 00
	13, Mabel Wythers, secretary.....	20 00
	16, Globe Delivery.....	6 33
	16, Globe Delivery.....	75
	23, Globe Delivery.....	7 08
	25, Western Glass & Paint Co., Supplies.....	5 90
	25, Hall & Co.....	3 50
	25, Margaret MacDonald, office work.....	12 00
	28, Dray .....	50
	28, Brooms .....	50
Sept.	5, Mabel Wythers, secretary.....	20 00
	10, Mamie Wood, work, fair grounds and office, 10 days....	20 00
	10, Ethel Wolfenbarger, fair grounds, 1¼ days.....	2 50
	7, Christian Dining Hall, fair grounds, Aug. 29-Sept. 7, meal tickets for employees.....	8 00
Sept.	11, Marion Smith, traveling expense from Kearney and services as judge.....	11 00
	11, A. J. Mercer, assistant and judge, 10 days.....	30 00
	11, W. G. Bishop, assistant and judge, 12 days.....	36 00
	11, E. K. Hurst, judge, ½ day.....	1 50
	11, Geo. E. Condra, judge, 1 day.....	3 00
	11, Nellie May Schlee, model teacher.....	5 00
	11, W. R. Jackson, judge, 1 day.....	3 00
	13, B. E. Timbers, labor 5½ days.....	17 50
	12, Rudge & Guenzel, supplies.....	9 79
	13, Wilber S. Camp, signs.....	2 00
	13, Mamie Wood, office work.....	4 00
	17, John Oberlies & Son, lumber.....	9 48
	28, Mabel Wythers, secretary.....	40 00
Oct.	5, H. W. Hadden, booth material.....	5 00
	5, E. B. Dunham, booth material.....	2 00
	5, Crete Mills, booth material.....	2 00
	5, Henry C. Mariner, booth material.....	9 00
	5, Jell-o Booth .....	1 50
	5, Beatrice Creamery, booth.....	1 50
	9, Rudge & Guenzel, supplies.....	60

Nov. 20, Cora Davidson, office work.....	1 50
Dec. 3, Mabel Wythers, secretary.....	50 00
To Jan. 5, Messengers and telephones.....	2 25
Jan. 5, Globe Delivery .....	75
5, Globe Delivery .....	13 06
5, Adams Express .....	1 10

## OFFICE SUPPLIES.

Mar. 6, Mimeographs, short, to county officers.....	140
30, Mimeographs, short, to county superintendents.....	100
31, Mimeographs, long, to superintendents.....	300
April 14, Mimeographs, long, 2 pages.....	300
14, Mimeographs, short, to county superintendents.....	100
28, Mimeographs, short, to contestants with peanuts....	25
30, Mimeographs, short, to contestants.....	800
May 1, Mimeographs, short, to county superintendents.....	100
July 10, Mimeographs, short, to county officers.....	140
Aug. 6, Mimeographs, long, to county superintendents.....	100
15, Mimeographs, long, to county officers.....	180
15, Mimeographs, short, to wheat contestants.....	200
Sept. 3, Mimeographs, short, to county superintendents.....	100
11, Mimeographs, short .....	145
27, Mimeographs, short .....	150
Oct. 2, Mimeographs, long .....	120
31, Mimeographs, short, 2 pages.....	200
2,330 short sheets, at \$3.00 per thousand.....	\$7 00
1,200 long sheets, at \$3.50 per thousand.....	4 22
Mimeograph ink .....	1 50
Stencils, 21 at 8 cents.....	1 68
1,700 envelopes at 14 cents per hundred.....	2 39
	<hr/>
	\$16 79
Nov. 2, 1c stamps .....	\$0 18
12, 1c stamps, 100.....	1 00
17, 1c stamps, 200.....	2 00
17, 2c stamps, 100.....	2 00
24, 1c stamps, 100.....	1 00
27, 1c stamps, 80.....	80
Dec. 1, 1c stamps, 100.....	1 00
5, 1c stamps, 200.....	2 00
6, 1c stamps, 100.....	1 00
7, 1c stamps, 60.....	60
8, 1c stamps, 82.....	82
Nov. 20, 95 long sheets mimeograph paper	
24, 150 long sheets mimeograph paper	
245 total, at \$3.75 per thousand.....	90

Dec. 4, 1,200 short sheets at \$3 per thousand.....	3 60
Nov. 26, 25 2c stamped envelopes.....	50
27, 50 2c stamped envelopes.....	1 00
Dec. 6, 50 2c stamped envelopes.....	1 00
6, 250 1c stamped envelopes.....	2 50
To Dec. 6, 1,479 short envelopes at \$1.50 per thousand.....	2 25
To Dec. 6, 7 stencils at 8 cents.....	56
Dec. 20, To stamps and envelopes.....	9 00
Jan. 1, University Publishing Co., corn bulletins.....	69 65
Received from Secretary W. R. Mellor, May 1 .....	\$100 00
Received from Secretary W. R. Mellor, Sept. 8.....	800 00
Received from Secretary W. R. Mellor, Dec. 20 .....	200 00
Balance on hand .....	2 05
	<hr/>
	\$1100 00 \$1100 00

## CLASS K—BEES, HONEY AND APIARY GOODS.

E. WHITCOMB, SUPERINTENDENT.

FRIEND, NEBR., September 10, 1906.

*To the Board of Managers State Board of Agriculture, Lincoln, Neb.:*

GENTLEMEN: In compliance with rule 25 of general regulations relative to class superintendents, I beg to submit the following report in relation to Class K, Bees, Honey and Apiary Goods.

Looking along the line from the past the honey show of 1904 seems to have reached the climax. Scoring down premiums in 1905 and 1906 had the effect of driving away several good exhibitors and since the fair of 1904 not a pound of honey, not a sample of bees, nor a single article relative to bee-keeping has been placed on exhibition from without the state. With this the number of exhibitors within the state has grown less with the annual storing down of premiums offered, and it has required a greater effort to induce exhibitors to show their goods, and where they do not show they and their friends usually remain at home and do not attend the fair. If our memory serves us correctly we have officiated as superintendent of this class for the past twenty-three years. On our first visit to the fair in charge of this class we were flatly told that "there was no place for this class," and with a few feet of common lumber erected a booth on the then north end of Agricultural Hall where the honey show was made for that year. From that time this industry began to grow more and better, space was given and better premiums offered until the "Honey Show" became one of the attractions of our annual state fair. We have been loth to believe that there was any intention of merging everything into a stock show and that the horse race was to take precedence above all, or that the honey interests were to suffer on this account. That producers must exhibit their own honey has long since been one of the rules of this class. We recommend that

this rule be so modified as to allow exhibitors to show anything produced in the state from which the exhibit was gathered. I would further recommend restoring the premiums offered in 1904 for this class. While these premiums amounted in the aggregate to about \$300 yet we are of the opinion that it will bring to the fairs sufficient extra paid admissions to more than reimburse for this outlay. The bee interests of our state are among those most recently built up. It has during the past twenty or more years diffused a great deal of information among the people relative to the honey bee and her products which have been valuable to the state at large.

I am with much respect,

E. WHITCOMB, Superintendent Class K.

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#### CLASS M—MACHINERY.

I. W. HAWS, SUPERINTENDENT.

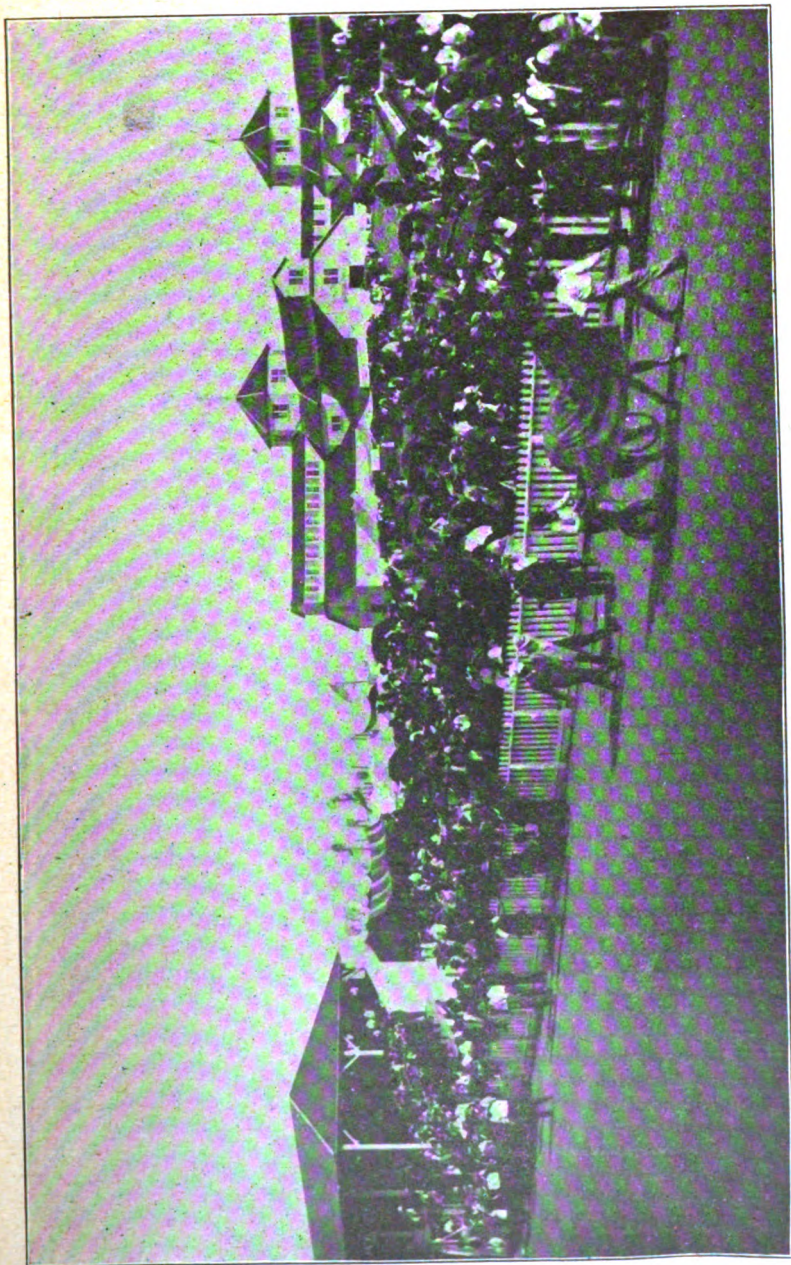
MINDEN, NEBR., September 25, 1906.

*To the Board of Managers Nebraska State Board of Agriculture:*

GENTLEMEN: I herewith submit a list of names of those that made exhibits in Class M, giving names of the firms, also the numbers of lots occupied by them, also showing the amount of transportation issued each firm and the kind. I have prepared a plat of the grounds in my charge, showing the location of each. This will be of very much assistance to the superintendent of this class in 1907 for I certainly would have appreciated this, especially the list of transportation. I am sure that I was imposed upon by some, and possibly I refused some that was just, but I had only my judgment to go by and this I used as best I could being new and a stranger to them all. If there is any part of this report that is not complete, please so advise me and I will finish same.

It would seem that there might be a saving in space as well as better satisfaction if the assignment of space were left to the superintendent of this class as in the other classes. That of course would depend whether he had any experience or not, but if so he could handle this I would think very much more satisfactorily, as he would know better as to the needs of the exhibitors. Speaking for myself I am sure that I could handle this department much better again than I did this year, as I have made the acquaintance of them all, and have learned in a measure their wants and could save both in space and transportation.

There are some exhibitors that have more space than they are entitled to, while there are some that have not enough and they can only be remedied by a thorough knowledge of their wants, learned by experience. There are some people showing (or were this season) that ought not to be allowed space upon our grounds as exhibitors. I believe that there ought to be some changes made as to the manner in which we assign our



BLEACHERS, 1906 STATE FAIR.



space and also as to the matter of transportation, but just what this should be I have not fully decided as they are matters one must weigh very carefully.

I believe that all of our exhibitors were well satisfied with the business that they got while with us and that they were fully paid for any expense that they were put to in making their exhibits.

I would dislike very much to see anything done that might have a tendency to cut down these displays, but on the other hand that they might be made bigger and better. So I think it ought to be pretty thoroughly considered before any changes in regard to furnishing space and transportation are made.

I am of the opinion that the erection of a large machinery hall would not only be a paying investment as well as a long-felt want, but that it would help in a measure to make more space, and something that the exhibitors would appreciate and willingly give us good rentals for same. We then could commence to demand something for space not only in the building, but a small rental for space outside if thought best. Many exhibitors asked me the question this fall why we did not build such a building as they would rather pay a good price for space in a building than to pay for those old leaky tents. These cost them from \$75 to \$150, depending on size. I simply mention these matters to show you the feeling among the exhibitors, but hardly think it necessary, for I believe that your honorable body already realize the necessity of this building.

Trusting that my first attempt in this line was satisfactory to your Board, I remain,

Yours very truly,

I. W. HAWS, Superintendent Class M.

American Steel & Wire Co., lots 103, 104, 105, 106, 10 coupons, 5 checks, 1 single horse.

Anderson Miller Co. (Geo. Burr in charge), lots 112, 113, 10 coupons, 2 checks, 1 double team, 1 night watch.

Avery & Co., lot 7, south annex, 15 coupons, 3 checks.

Aultman Engine & Thresher Co., lots 11, 12, 13, 10 coupons, 4 checks.

E. N. Averill Brick Machine Co., south side grounds, 4 coupons.

Acme Harvester Co., lot 5, south annex, 6 coupons.

A. D. Baker Mfg. Co., lot 4, north annex, 2 coupons, 2 checks.

Beckman Bros., lot 14, north annex, 2 coupons.

Brumley Steel Fence Co., fence exhibit space, 2 coupons.

Banner Buggy Co., lot 4, south annex, 1 coupon.

Bridge & Beach Mfg. Co., Fraternity street, 1 coupon, 2 checks.

Birdsell Mfg. Co. (in tent with Lincoln Imp. Co.), 1 coupon, 1 check.

Bartholomney Co., on lots 18 and 19, 4 coupons, 1 night watch, 1 auto. permit.

Council Bluffs Hay Tool Co., lots 15 and 16, 3 coupons, permit 1 team 3 days.

Cox Automatic Gate, fence exhibit, \$2 for admission, 2 coupons.  
Clark Implement Co., lots 5 and 6, north annex, 3 coupons, 2 checks,  
J. I. Case Co., lots 25, 26, 27 and 28, 24 coupons, 1 double team or auto.  
Carr Mfg. Co., lot 35, 3 coupons.  
Columbus Buggy Co., in tent with Lincoln Imp. Co., 2 coupons, 2 checks.  
Cedar Rapids Implement Works, north hog sheds, 5 coupons.  
Cushman Motor Co., lot 63, 2 coupons, 1 night watch.  
Cushman Power & Sprayer Co., lot 63, 1 coupon, 1 night watch.  
Dempster Mill Mfg. Co., lots 60, 61, 62, 36 and 37, 14 coupons, 3 night watches.  
David Bradley & Co., lots 96, 97, 10 coupons, 2 checks, 1 night man.  
John Deere & Co., lots 107, 108, 109, 110, 111, 40 coupons, C. S. Voreheese, personal, Mr. Thompson, personal, 1 single horse, 1 double team, 10 checks September 3, 15 checks September 4, 15 checks September 6.  
Des Moines Wagon Works, with fence exhibit, 1 coupon, 2 checks.  
A. McDole, with fence exhibit, 2 coupons.  
E. W. Dale, with fence exhibit, 1 coupon.  
Emmerson Mfg. Co., lots 86, 87, 88, 4 coupons, 1 night watch.  
Ebey Mfg. Co., as above, 3 coupons.  
W. L. Monroe Alfalfa Mill, lot 98, 4 coupons, 2 night watches.  
Allen P. Elley, as above, 4 coupons.  
B. E. Engelhart, lot 3, south annex, 3 coupons, 3 checks.  
Fuller, Johnson & Co., lots 90, 91, 15 coupons, 1 night watch.  
Fish Bros., lot 99, 5 coupons, 2 checks.  
Frick Co., lot 17, 4 coupons.  
Fairbury Iron Works, lot 64, 5 coupons, 4 checks.  
Fairbanks, Morse & Co., lots 90, 91, 8 coupons, 1 check.  
Harbinson Mfg. Co., concession grounds, 3 coupons.  
Hart-Parr Co., lots 8, 9, south annex, 3 coupons.  
Huber Mfg. Co., lots 18, 19 and 20, 5 coupons, 1 night watch.  
Harrison Wagon Scale Co., showing with Linninger Imp. Co., 3 coupons.  
Humane Horse Collar Co., hauling wagon on grounds, 6 checks, 2 double teams and driver.  
Hurley Machine Co., showed on lot 114, \$2 for 1 coupon.  
International Harvester Co., lots 69, 70, 71, 72, 26 coupons, 1 single horse and buggy.  
Iowa Gate Co., fence exhibit grounds, 2 coupons.  
International Husker Co., back end lots 63 and 64, 6 coupons, 6 checks.  
R. J. Jones, lot 15, north annex, 1 coupon.  
Johnson & Field Co., showing with Pioneer Co., 2 coupons.  
O. S. Kelley Mfg. Co., showing with Lincoln Imp. Co., 2 coupons, 1 night watch.  
Kansas City Hay Press Co., lots 9, 10, north annex.  
Keys Bros., lot 89, 7 coupons.  
King Press Drill Co., lot 30, 2 coupons.  
Karr Mfg. Co., with Linninger Imp. Co., 1 coupon, 2 checks.

- Kingman Implement Co., lots 78, 79, 10 coupons, 1 night watch.  
O. Linebarger, 1 coupon.  
Linninger Imp. Co., lots 65, 66, 67, 68, 31 and 32, 14 coupons, 6 checks, 1 team for hay press.  
Ann Arbor Machine Co., with above firm, 4 coupons.  
Lincoln Plow & Imp. Co., lots 38, 39, 40, 5 coupons, 1 night watch.  
Lincoln Mfg. & Development Co., lot 10, south annex, 2 coupons, 1 single horse, 6 checks.  
C. H. Lee, with fence exhibits, 1 coupon, 1 night watch.  
The Leubben Baler Co., south annex, 6 coupons, 2 night watches.  
Lincoln Implement Co., lots 118, 119 and 120, 2 coupons, 1 single horse.  
J. W. Moon Buggy Co., lot 115, 2 coupons, 2 checks.  
Marshalltown Buggy Co., lots 1 and 2, south annex, 6 coupons.  
Moline Plow Co., lot 86, 5 coupons.  
Murray Plumbing Co., lot 56, 2 coupons, 2 checks.  
Monitor Drill Co., lot 116, 5 coupons.  
Moon Buggy Co., in tent of Lincoln Imp. Co., 4 coupons.  
McFarland Carriage Co., reported in name of Andersen-Millard Co.  
McGowan & Finnigan, in tent of Lincoln Imp. Co., 2 coupons, 8 checks.  
T. J. Northwall & Co., part of lot 121, 7 coupons.  
Northwestern Thresher Co., lots 11, 12, south annex, 7 coupons.  
Newton Wagon Co., in tent of Lincoln Imp. Co., 2 coupons.  
P. W. O'Conner, showing with Keys Bros., 1 coupon.  
Olds Gas Co., lot 14, 4 coupons.  
Oskaloosa Saddlery Co., showed with Peru Plow Co., 1 coupon.  
Omaha Light & Power Co., on lot 100, 2 coupons.  
Parsons Hawkeye Co., east of Keys Bros., 1 coupon.  
Pella Stackler Co., lot 17, north annex, 4 night watches.  
Parlin, Orendoff & Martin Co., lots 100, 101, 102, 12 coupons, 6 coupons, 17 checks.  
Pattee Plow Co., lot 117, 4 coupons, 1 night watch.  
Parsons Band Cutter Co., in Lincoln Imp. Co. tent, 3 coupons, 1 check.  
Pioneer Imp. Co., lots 73, 74, 8 coupons, 4 checks, 1 night watch.  
Page Fence Co., fence exhibit grounds, 3 coupons, 2 checks.  
L. E. Porter Simplex Block Machine, no transportation.  
Peru Plow Co., west of cattle barns, 10 coupons, 5 checks.  
R. H. Quick, fence exhibit grounds, 1 coupon.  
J. L. Rowell Mfg. Co., lot 41, 4 coupons.  
Racine Sattly Co., lots 80, 81, 82, 83, 15 coupons, 1 single horse, 1 double team, 1 check.  
Reeves Co., lots 21, 22, 23, 24, 15 coupons, 1 single horse, 1 double team.  
M. Rumley Co., lots 7, 9, north annex, 8 coupons.  
Rice Bros., fence exhibit grounds, 4 coupons, 2 night watches.  
Rock Island Stove Co., Fraternity street, 1 coupon, 2 checks.  
Rock River Mfg. Co., fence exhibit grounds, 1 coupon.  
South Bend Chilled Plow Co., with Lincoln Imp. Co. tent, 1 coupon.

St. Joe Plow Co., lot 30, 4 coupons, 2 checks, 1 double team.  
Ft. Scott Mfg. Co., lots 90, 91, 6 coupons.  
Smith Mfg. Co., lot 33, 4 coupons, 1 check.  
Sunderland Bros. Roofing Co., lot 88, 1 coupon.  
Western Supply Co., north end lots 30, 37.  
Grand-Detour Plow Co., lot 58, 6 coupons.  
Sandwich Mfg. Co., lot 59, 9 coupons, 1 double team.  
D. M. Sechler Carriage Co., lot 114, 8 coupons, 4 checks, 1 night watch.  
Sterling Mfg. Co., lots 87, 88, 7 coupons, 4 checks.  
Baker Mfg. Co., lot 87, 1 coupon, 5 checks.  
Spartan Mfg. Co., lot 34, 4 coupons, 4 checks, 1 double team.  
Taylor Husker Co., lots 2 and 3, north annex, 2 coupons, 1 double team.  
Union Transfer Co., lots 75, 76, 77, 8 coupons, 4 checks, 1 night watch, 1 3-horse team.  
H. H. Van Brunt, lots 8, 9, 10, 11 coupons, 6 checks.  
Walters Light & Heating Co., fence exhibit ground, 2 coupons.  
Wilson Moline Buggy Co., lots 38, 39, 40, 6 coupons, 9 checks.  
Woodmanse Mfg. Co., lot 56, 5 coupons, 10 checks.  
L. Wells & Co., lot 116, 8 coupons, 5 checks.  
Western Wheel Co., lot 63, 3 coupons,  
M. J. O'Brine, culvert man, 1 coupon.  
Westinghouse Co., showing with Pioneer Co., 1 coupon, 1 night watch.  
Western Steel & Wire Co., lot 12, north annex, 2 coupons, 1 double team.

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## CLASS O—COUNTY COLLECTIVE EXHIBITS AND AGRICULTURAL HALL.

W. W. COLE, SUPERINTENDENT.

*To the President and Board of Managers of the State Board of Agriculture:*

Having been superintendent of the Agricultural Hall for several years and having had the opportunity of judging closely, I feel that I am in a position to say that the hall this year was managed better and presented a better appearance than ever before since I have had charge of it. Although the allotted space was shortened to accommodate all exhibitors, with one or two exceptions the exhibitors showed good taste in arrangement.

While I heartily endorse the new score card used and mode of judging this year and think it should be adopted and all exhibitors given to understand what will be required of them in the future, yet I regret that this mode of judging was used this year, for reasons which I will explain.

As you know, there was great dissatisfaction among those exhibitors who failed to score the 800 points and whose exhibits this year were better than in 1905. In your annual report in 1905 on page 144 you guar-

antee the \$100 to all exhibitors who fail to score the 800 points. Under this law, when ordered by the Board of Managers to shorten the space to accommodate all exhibitors, I assured them that this would not lessen their percentage, as this was my interpretation of the law just referred to. With this understanding the exhibitors put forth their efforts to make the best showing possible, many of them exceeding all previous exhibits. By the use of the new method of scoring they failed to score the required 800 points and consequently did not receive the amount (\$100) guaranteed. This naturally caused much dissatisfaction, as previously they all received the \$100 whether they scored 800 points or not.

As I said before, I hope to see this method used hereafter, yet I feel that those exhibitors should be satisfied or this deficiency made good, their claim being that if they had had their full 50 feet they would have been able to have scored the number of points required.

I would suggest, as a means of bringing about the desired results, that the State be divided into three districts, putting Cedar, Wayne, Stanton, Colfax, Butler, Seward, Saline and Jefferson and all counties east in one district; putting Knox, Antelope, Boone, Nance, Merrick, Hamilton, Clay, Nuckolls and all counties east in another district, and all counties west of this line in another district; requiring the eastern district to score 800 points, the centre to score 700 points and the western district 600 points, and counties scoring above these specified number of points to receive twelve and one-half cents for each point scored.

I believe if some such division as this could be established it would create more harmony among the exhibitors than the present mode of judging.

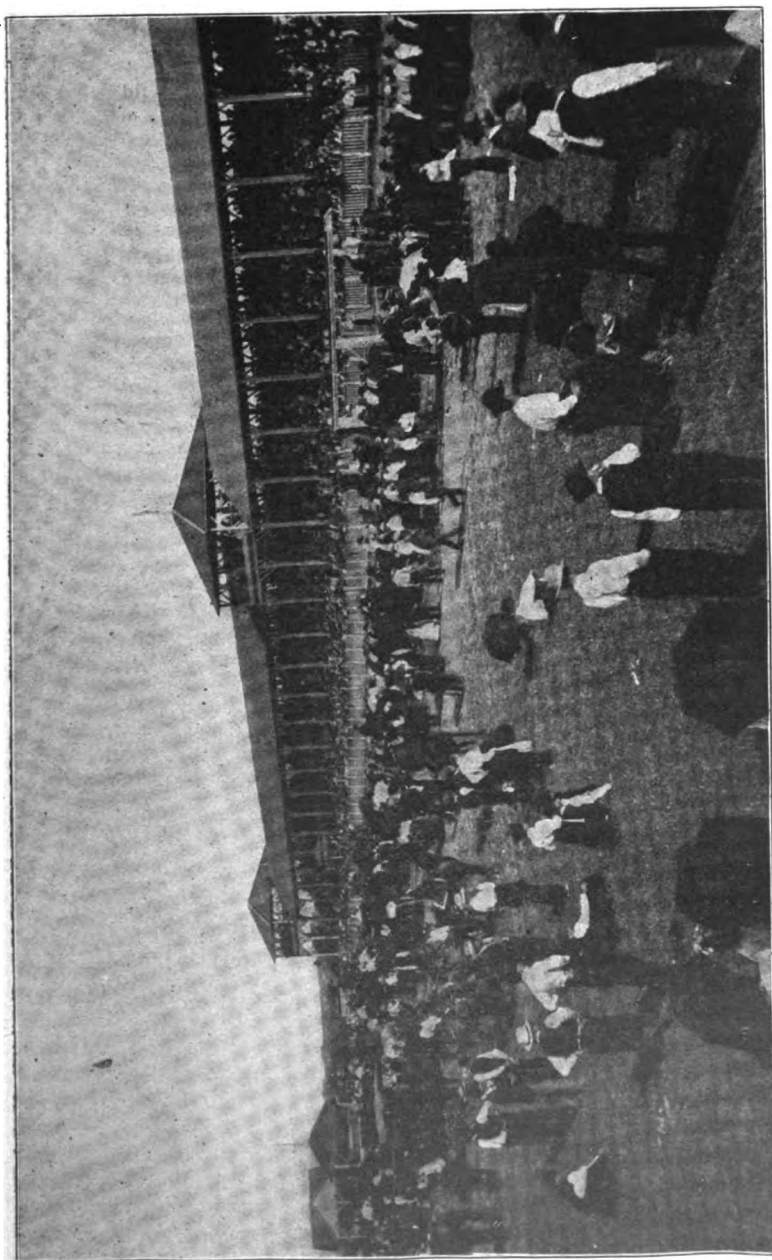
The county collective exhibits have been a special attraction, and while my interests are with the Board of Managers and I have put forth every effort possible to make the state fair a success, yet I feel that something ought to be done to create as much harmony among the exhibitors as possible.

I would like to add that a nice fountain in one of the centres would add much to the beauty of the Hall. I would also insist that something be done with the water closets in the Hall.

I sincerely hope that this report will be kindly received and that you will understand the position I am in, with the interest of the state fair at heart and at the same time endeavoring to satisfy all exhibitors.

Respectfully submitted,

W. W. COLE, Superintendent.



THE GRAND STAND.

## CLASS Q—SPECIALS.

CHAS. MANN, SUPERINTENDENT.

No entries made in the book. The Nebraska Farmer Special Premiums.

	Points	Yearly Sub.
Saline county .....	1295	100
Washington county .....	1123	90
Kearney county .....	1011	80
Nemaha county .....	940	70
Pawnee county .....	917	60
Howard county .....	888	50
Webster county .....	840	40
Richardson county .....	834	30
Franklin county .....	833	20
York and Cuming counties, tie.....each	826	5

Respectfully submitted,

CHAS. MANN, Superintendent.

## REPORT OF SUPERINTENDENT FORAGE.

CHAS. MANN, SUPERINTENDENT.

William Dunham & Son, of Lincoln, furnished the hay, straw and feed, as per contract with the Board, delivered the same to exhibitors on the ground, received the cash for the same, took back what was left over. Very short of straw the first part of fair.

Respectfully submitted,

CHAS. MANN, Superintendent.

## CLASS S—SPEED.

N. J. RONIN, SUPERINTENDENT.

To the Nebraska State Board of Agriculture, Lincoln, Neb.

GENTLEMEN: Enclosed you will please find my report as superintendent of speed during the state fair held September 3 to 7, 1906.

Yours very truly,

N. J. RONIN.

September 3, 1906. Trotting, 3-year-old class. Stake, \$500.

Dr. Igo .....	1	3	1	1
Mowing .....	2	1	2	3
Vestale .....	3	2	3	3
Alva Dillon .....	5	5	4	4
Friendly Maiden .....	4	4	5	5
Miss Hamilton .....	6	6	dr.	
King Bee .....	7	7	6 dr.	

Time, 2:24¼, 2:25¼, 2:23¼,  
2:24¼.

Same Day. Pacing, 2:22 class.  
Purse, \$500.

Bill Moore .....	2	1	1	1
Montauk .....	1	2	2	2
Fortunella .....	3	3	3	3
Time, 2:22¼, 2:17¼, 2:23, 2:18¼.				

Same day. Running,  $\frac{1}{2}$  mile and repeat.

Scout .....	1	1
Golden C .....	2	2
Tom Gibbons .....	3	3
Ruby Day .....	Dis.	

Time, 50, 50 $\frac{1}{4}$ .

September 4, 1906. Pacing, 2:30.  
Stake, \$1,000.

Silver Fox .....	1	1	1
Maude Allen .....	2	3	2
Lord Direction .....	4	4	3
Miranda .....	5	5	4
Black Douglas .....	3	2	ds.

Time, 2:18 $\frac{1}{4}$ , 2:18 $\frac{1}{4}$ , 2:19 $\frac{1}{4}$ .

Same Day. Pacing, 3-year-old. Stake,  
\$500.

King Pin .....	1	1	1
Lady Online .....	2	2	2
Ottawa Boy .....	3	3	3

Time, 2:18, 2:18 $\frac{1}{4}$ , 2:18 $\frac{1}{4}$ .

Same Day. Trotting, 2-year-old.  
Purse, \$250.

Miss Dinsmore .....	1	1
Teddy R .....	2	2
Jolly Chief .....	3	3

Time, 2:34 $\frac{1}{4}$ , 2:36.

Same Day. Nebraska Derby Running, 1 $\frac{1}{2}$  miles. Purse, \$500.

Electric Spark .....	1
Young Pilgrim .....	2
Potheon .....	3
Swell Girl .....	4
Bill Babel .....	5

Time, 1:47.

September 5 1906. Trotting, 2:27.  
Stake, \$1,000.

Narka Star .....	3	1	1	3	1
Wilbar .....	2	2	2	1	2
Fannie C .....	1	3	3	2	3

Time, 2:25 $\frac{1}{4}$ , 2:23 $\frac{1}{4}$ , 2:24, 2:23 $\frac{1}{4}$ , 2:23 $\frac{1}{4}$ .

Same Day. Trotting, 2:16 class.  
Purse, \$500.

Lena L. U. ....	1	1	1
Harry Johnson .....	2	2	4
Silver Russell .....	4	4	2
Reliance .....	3	3	3

Time, 2:17 $\frac{1}{4}$ , 2:18 $\frac{1}{4}$ , 2:19 $\frac{1}{4}$ .

Same Day. Pacing, 2:20. Stake,  
\$1,000.

S. S. All. ....	1	1	1
Eddie Woods .....	2	2	2
Flossie Wilkes .....	3	3	3
Teddy .....	dis.		

Time, 2:13 $\frac{1}{4}$ , 2:14 $\frac{1}{4}$ , 2:14 $\frac{1}{4}$ .

Same Day. Running,  $\frac{3}{4}$  mile dash.  
Purse, \$75.

Fox E. ....	1
Jungles .....	2
Goldy C. ....	3
Scorporlette .....	4
Tom Gibbons .....	5
Bert Allen .....	6

Time, 1:18.

September 6, 1906. Pacing, 2:17  
class. Special, \$500.

Lady Strath .....	1	1	1
Nina Russell .....	2	2	3
Bill Moore .....	4	3	2
Maude Allen .....	3	4	4
Queen Sign .....	5	5	5
Polotelle .....	6	dis.	

Time, 2:15 $\frac{1}{4}$ , 2:12 $\frac{1}{4}$ , 2:13 $\frac{1}{4}$ .

Same Day. Trotting, 2:35 class.  
Purse, \$500.

Clare Cooper .....	1	1	1
Mino N. ....	2	2	2
Oakland Flash .....	3	6	3
Lizzie Bigstaff .....	4	3	4
Cora Lee .....	6	4	5
Prince Ugo .....	5	5	6
Check Hook .....	7	7	ds.

Time, 2:20 $\frac{1}{4}$ , 2:20 $\frac{1}{4}$ , 2:21 $\frac{1}{4}$ .



Same Day. Running, $\frac{1}{2}$ mile dash. Purse, \$75.	Senator .....2 2 3 2
Charles B. ....1	Easter Lily .....3 4 2 4
Goldy C. ....2	Time, 2:26 $\frac{1}{4}$ , 2:24 $\frac{1}{4}$ , 2:32, 2:27 $\frac{1}{4}$ .
Fox E. ....3	Same Day. Trotting, 2:15. Spe- cial, \$300.
Bill Babel .....4	Mesmerism .....4 1 1 1
Time, 1:04 $\frac{1}{2}$ .	Jennie Lee .....1 2 2 3
Same Day. Running, 1 mile dash. Purse, \$75.	Rexella .....3 3 4 2
Young Pilgrim .....1	Reliance .....2 4 5 5
Swell Girl .....2	Queen Sign .....5 5 3 4
Jungles .....3	Time, 2:20, 2:21 $\frac{1}{4}$ , 2:21 $\frac{1}{4}$ , 2:24 $\frac{1}{4}$ .
Bert Allen .....4	Special Speed Attractions.
Time, 1:46 $\frac{1}{4}$ .	Emma—Guideless Wonder.
September 7, 1906. Pacing, 2:35 class. Purse, \$200.	Surena—Guideless Wonder. Time, 2:17 $\frac{1}{4}$ .
Black Douglas .....1 1 4 1	Doctor Tom—Guideless Wonder.
Lizzie Cameron .....4 3 1 3	Time, 2:08 $\frac{1}{4}$ .
Number of races—Trotting..... 6	Orphan Boy. Pacing to beat 2:10, won; time, 2:09 $\frac{1}{4}$ .
Number of races—Pacing..... 6	
Number of races—Running..... 6	
Number of exhibition miles..... 7	
Number of horses starting in harness races.....54	
Number of horses starting in running races.....24	
Money collected for entries.....\$2,147 50	
Money collected for stall rent..... 160 00	
	\$2,307 50
Total amount paid for all races.....\$6,093 75	
Less amount collected as above..... 2,307 50	
	\$3,786 25

## RECOMMENDATIONS.

Races should be given every day with some special attraction, such as will best please the people.

Classes for trotting, pacing, running, and exhibition.

Purses and stakes should be liberal, but not extravagant.

Conditions strictly according to the rules of the American Trotting Association.

Judges and Timers. Only competent and honest men, who are familiar with the racing rules.

Starting Judge. A licensed starter, who can come well recommended.

Advertising. This is the most important of all, and should be looked

after, early and late. Money properly spent for advertising will do more for the success of the fair than any other one thing.

Improvements. The seating capacity of the grand stand should be made to seat at least fifteen thousand people; five thousand of these seats should be reserved and placed on sale at popular places ten days preceding the fair. If this condition existed, people could visit the fair with comfort and know that they could enjoy the sport.

Track is good and with work will always be good, but there should be some new fences built around it, and a new fence built, about six feet back of the inside track fence, for hitching purposes.

Barns. I would not recommend the building of large, expensive ones, for the reason that horsemen do not like them as well as good shed barns. The danger of fire in big barns is one of the principal objections, and until such time as the location of new barns has been fully decided upon, I would defer from building expensive structures. It may be necessary to build about fifty more good box stalls, and if so, I would recommend that they be built on the shed order.

Electricity. Electric bells should be placed so that horses can be called from the judges' stand and also to the band.

Superintendent of speed should be one who is well acquainted with the race horse business, and thoroughly understands the racing rules, and has pride in looking to the welfare of the fair, and the horsemen. All important matters concerning this department should be submitted to him for his advice. Respectfully yours,

N. J. RONIN.

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REPORT OF HARRY W. OLDEROG, WINNER OF BOYS' CORN GROWING CONTEST IN 1906, WHO RAISED 118 BUSHELS AND 30 POUNDS FROM ONE ACRE OF GROUND.

GRETNA, NEBR., May 7, 1906. DEAR SIR: I am going to plant an acre of seed corn to see how much I can raise on it. Yours truly,

HARRY W. OLDEROG.

GRETNA, NEBR., Oct. 29, 1906.

*Mr. Mellor, Lincoln, Nebr.*

MY DEAR SIR: Enclosed you will find a detailed account of my method of caring for my crop which was raised for the present contest.

I also wish to state it was impossible for me to get the same men who measured my ground and watched the gathering to go to town with each load, so I send the affidavit of the man who carefully weighed each load. Trusting everything will be satisfactory in every particular, I wait for an early reply. Yours very truly,

HARRY W. OLDEROG.

The ground on which I raised my corn for the contest was selected and prepared in the following manner:

I selected a piece of black loam soil that had been in pasture for

five years, and was located along a small ravine, thus getting a piece of soil that has received rich deposits during the freshets of the past few years. Also the rich alluvial soil as it was washed from the adjoining hillside.

The ground was plowed during the early spring about six inches deep and allowed to remain as it was turned over until time to plant, thus allowing the soil to receive the early spring rains, also to allow the air to circulate freely through the surface soil and hasten decomposition of grass, roots, etc. About the middle of May I harrowed the ground twice, following the same way as I plowed it, in order to harrow the upturned sods downward rather than turning them with the grass surface upward and retarding decomposition. I next went onto the field with a disk and disked it twice crosswise, thus chopping the heavy sods to a fine soil. But upon a close examination I found the under soil to be quite coarse and not packed sufficiently close to allow the underground water to be carried to the surface by capillarity, also that in planting the crop some of it would fall into these hollows and not have a perfect seed bed to rest in, so I rolled the field carefully with a heavy roller to insure a well-packed seed bed, then harrowed it again to be sure of a perfect surface mulch, and then I considered the field ready for planting.

The field was new and I thought it unnecessary to add any fertilizer, so none was used. I carefully watched the ground and tested it daily in regard to temperature and moisture and found it to be in good condition for planting the 17th day of May, temperature ranging in different parts between 65 and 70 degrees above zero.

After the corn had been planted several days I found the ground to be drying out quite rapidly, so I harrowed it again to preserve a good surface mulch, thus checking evaporation and hastening the growth of the young sprouts. In a few days after I harrowed the field the corn came up nicely and every stock seemed to be large and healthy. The weather continued dry, so I turned into the field with cultivator and gave it a thorough cultivation, thus forming a deeper surface mulch, and at the same time stirring the soil around the corn and making it more available for plant food.

A few days after I cultivated the crop for the first time we had a heavy rain, this packing the soil quite hard, so as soon as the surface was sufficiently dry to warrant it I entered the field and plowed it again to prepare the surface mulch so that a large portion of the rain might be retained in the soil to ward off the drought which was prophesied by many of the farmers.

The same method was followed during the remainder of the growing season, but I was very cautious during the last cultivation to plow very shallow and at quite a distance from the corn, to guard against injuring the corn roots, which were then extending across the entire row. The last cultivation was more to prepare a good surface mulch and kill a

few small weeds, which might be sprouting at this time, rather than hilling up the corn or attempting to cut out any large weeds which might be found standing near the corn. I took great pains to keep the field free from suckers, as this proves great injury to the corn, and especially would this have been true had the season been a dry one.

STATE OF NEBRASKA, }  
COUNTY OF SARPY, } ss.

Henry Drees, Wm. Siekkotter, and Claus Selk, being each duly sworn, depose and say that they are residents of the county of Sarpy and state of Nebraska, and that they are freeholders of the said county.

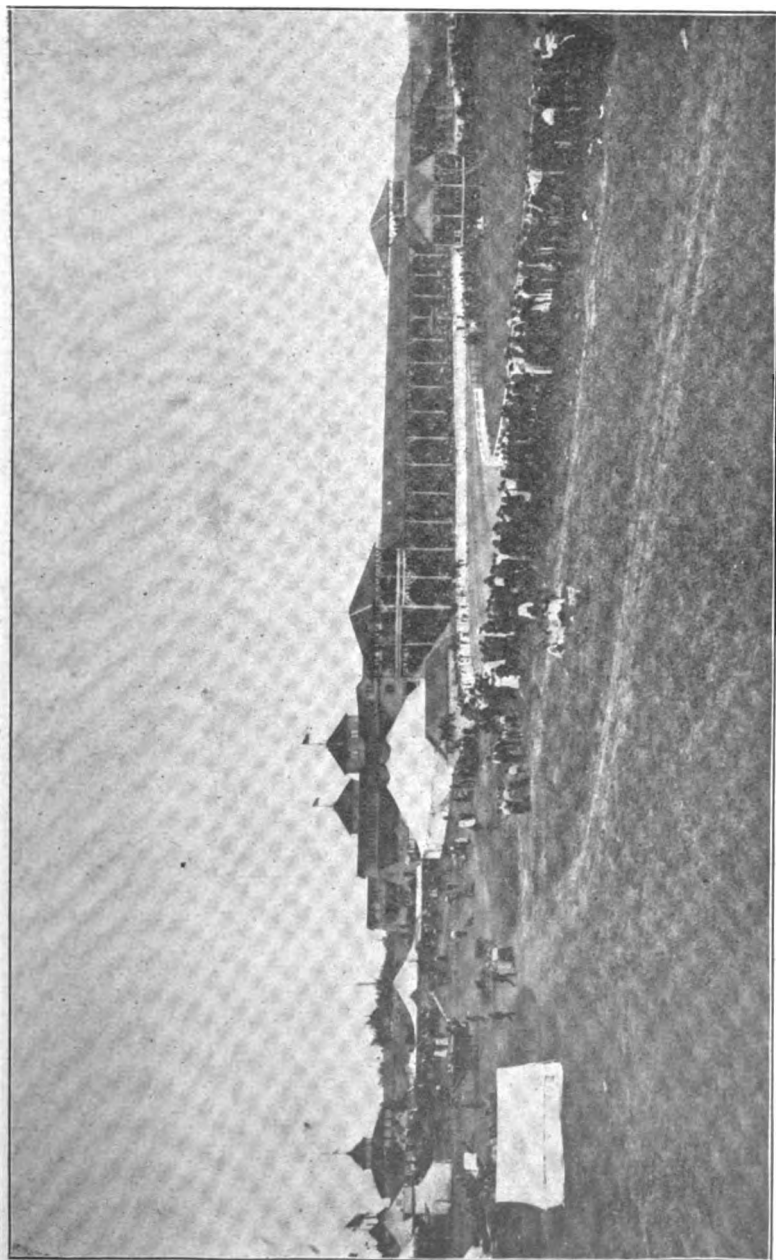
Affiants further state that they are acquainted with Henry Olderog and that they together measured the tract of land upon which the corn planted and raised by him, for entry in contest under direction of Nebraska State Board of Agriculture, and by him husked and delivered to the H. J. Rolfs & Co. elevator in Gretna, Neb. That the said tract by measurement was just one acre of ground. These affiants further state that all of the corn which was so delivered by the said Harry Olderog was raised from and was produced upon the acre measured by us. Affiants further state that they were not present at the said elevator in Gretna at the time the several loads were by him delivered and weighed.

HENRY DREES,  
WM. SIEKKOTTER,  
CLAUS SELK.

Subscribed and sworn to before me this 27th day of October, 1906.  
[SEAL.] ELMER S. NICKERSON, Notary Public.  
My commission expires February 12, 1910.

The following is a list of the weights to a bushel as proposed in a bill introduced in the last legislature:

	Pounds
Alfalfa seed .....	60
Apples, green .....	50
Apples, dried .....	24
Barley .....	48
Bran .....	20
Blue-grass seed .....	14
Brome-grass seed .....	14
Buckwheat .....	52
Castor beans .....	46
Cherries .....	40
Clover seed .....	60
Corn, shelled .....	56
Corn, in ear, husked .....	70
Corn, in ear with husk .....	75
Cornmeal .....	50
Flaxseed .....	56
Hair for plastering .....	8
Hemp seed .....	44
Hungarian seed .....	50
Lime, unslaked .....	80
Malt .....	38
Millet seed .....	50
Navy beans .....	60
Oats .....	32
Onions .....	57
Onion top sets .....	28
Orchard grass seed .....	14
Osage orange seed .....	32
Peaches, dried .....	33
Peas, stock and green .....	60
Potatoes, Irish .....	60
Potatoes, Sweet .....	50
Red top seed .....	14
Rye .....	56
Spelts .....	48
Sorghum or cane seed .....	50
Timothy seed .....	14
Turnips .....	55
Wheat .....	60



EAST END RACE TRACK, 1906 STATE FAIR.



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**THE CAROLINA POPLAR.**

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**BY CHARLES E. BESSEY.**

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## THE CAROLINA POPLAR.\*

BY CHARLES E. BESSEY.

In the west, especially in the Mississippi valley, a tree has been largely advertised and sold under the name of Carolina Poplar. In some cases extravagant claims are made in regard to its good qualities, which, on the other hand, are strenuously denied by some tree growers. There has been a good deal of doubt, also, in regard to the specific identity of the tree, some holding it to be quite distinct from the common cottonwood, while others regard it as a mere variation or sport of that species which has been propagated by cuttings from the staminate tree. In order to throw some light upon these questions, the following facts are now published as a preliminary paper, which may be followed by a more exhaustive discussion later.

### DESCRIPTION OF THE TREE.

*Leaves.*—These are large, broadly heart-shaped, prominently serrated with incurved teeth, the veins rather prominent on the under surface. The texture is firm, and both surfaces are quite smooth. The color of the foliage is a rich, dark green, and the petioles, which are long and flattened, are more or less reddish, as is frequently, also, the midrib of the blade. On vigorous shoots, the leaves are often five to seven inches long, four inches broad, and their petioles fully three inches long, while on less vigorous shoots, the leaves may be as small as three inches in length, three in breadth, and their slender petioles may be no more than two inches long.

*Twigs.*—More or less angled by narrow, corky ridges which extend downward from the centre and sides of the leaves. Color when mature, light brown. The angles are much more prominent on very vigorous twigs, and may be almost wanting on those which are slow-growing.

*Young Branches.* These eventually become smooth and round by the expansion and stretching of the bark as the branch increases in thickness. Color, light brown. This brownish color should serve to distinguish the Carolina Poplar from the common cottonwood, on which the young branches ultimately become white.

*Shape of Crown.*—The crown or "top" of this tree is rather narrow on account of the more erect growth of the branches. Left to themselves, the branches of the crown tend to grow upward somewhat as in the Lombardy Poplar, but by no means to such an extreme. Even when the top has been pruned back by having the terminal branches much shortened, it soon resumes its narrowed and somewhat compressed shape.

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\* This paper was originally prepared at the request of the United States Forest Service, and is here printed in a somewhat revised form, with the permission of the chief of the service.

This erect tendency of the branches and compact form of the crown in this tree, is in marked contrast to the common cottonwood in which the branches are much more divergent, resulting in a markedly spreading crown.

*Buds.*—Much less gummy than in the common cottonwood, but otherwise resembling them.

*Trunk.*—Darker colored (brownish) than in the common cottonwood, in which the trunk is grayish.

*Flowers.*—Only the staminate ("male") flowers occur on the trees under observation. These are in elongated cylindrical clusters (catkins), which are compact at first, but eventually they elongate and become slender and drooping. When they first appear, they are purplish-red in color, but as they grow older, they fade into a dirty gray.

*Rapidity of Growth.*—Under cultivation, Carolina Poplar trees make a strong and vigorous growth, the shoots of a season often attaining a length of six to ten feet. Such shoots are nearly half an inch in thickness a little distance from the terminal bud, and are always very distinctly angled. This rapid growth of the young trees appears to be normal for the Carolina Poplar, since it occurs in all healthy trees. The same rapid growth, with consequent increase of size, and marked development of angles on the twigs, takes place in the common cottonwood when sprouts spring up from the stump after the cutting of the tree, and it may well be that this similarity of the abnormal shoot of the one tree to the normal shoot of the other has contributed to the confusion as to their specific identity.

#### VALUE FOR SHADE.

The Carolina Poplar, being a rapidly growing tree, with a tenacious life, which renders it very easy to handle and transplant, is especially well fitted to supply the needs of the man who wants a pretty shade tree in a short time. In a couple of years a few Carolina Poplars will cast a considerable shade on the ground immediately around the house, and make far more tolerable the heat of the midsummer sun. Of course it is not as pretty and graceful a tree as the American Elm, but it is often difficult to make the elm grow at once in the raw prairie ground, and it is a cruelty to the wife and children who live in shadeless houses to compel them to wait until the elms may be grown. Any tree that will live and grow rapidly is a boon to those who live upon the prairies and plains. It matters little to the plainsman that his shade trees are not as fine looking as American elms. They have quickly given him and his family some patches of shade to cut off the hot glare of the sun. This is the all-sufficient excuse for their planting. Better by far a Carolina Poplar today, which gives a grateful shade from the hot sun, than the most beautiful elm, which may or may not succeed in growing a few years hence in the untamed soil of the plainsman's dooryard. So, too, in many a western village it is far better to shade the sidewalks

with Carolina Poplars, which will certainly grow, and grow rapidly, than to wait for the uncertain growth of otherwise more desirable trees. Here is a case where "the best" is not "the cheapest," when we take into the reckoning the comfort of the dwellers in the shadeless houses, and the sun-scorched villages.

The western settlers have acted upon the theory set forth above in planting extensively of the common cottonwood for a quick shade. Of course they know that cottonwood trees were not as desirable as elms, oaks, ashes, walnuts and maples, but *the cottonwood would grow*, and grow easily, while the growth of the others was much more difficult and uncertain. So the plains were soon dotted over with cottonwood groves, and the village streets were lined with the quick-growing trees, which soon transformed the country and the village houses into comfortable homes. But when the shadeless heat was forgotten, and the trees, now grown large, began to shed their "cotton" in increasing amounts, the tree planters forgot the service rendered by the cottonwood trees in the early days and thought only of the troublesome cotton which they now shed. Thus it has happened that in many a village the cottonwoods have been cut down in wrath by the men who as boys played in the shade of these same trees—the only trees then to be seen—the only shade on the wide, hot prairie. The objection to the cottonwood which ultimately condemns it for a shade tree, namely that of shedding a disagreeable amount of cotton, does not hold against the Carolina Poplar, since only the staminate (male) tree is known in cultivation. With a more rapid growth, and the absence of the cotton nuisance, this tree must commend itself to every man who wants—who *must have* a quickly-grown shade tree.

#### VALUE FOR FUEL.

Exact data as to the relative fuel value of the dry wood of the Carolina Poplar are wanting, but cannot be far from that of the common cottonwood. Several years ago the writer made some careful calculations as to the relative fuel values of the growths of various common species of trees calculated as dry wood, as follows:

	At 10 years	At 15 years	At 18 years
Cottonwood .....	100	100	100
Hickory .....	11	12	12
Oak .....	6	5	6
Walnut .....	—	—	12
Ash .....	—	21	—

Even allowing the Carolina Poplar to have but one-half the actual fuel value of cottonwood (a most unlikely supposition), and supposing it to grow no more rapidly (which is certainly not the case) it is still a much better heat producer than any other of our common trees. It is safe to assume that in ten years' time the Carolina Poplar will yield an amount of fuel having at least three times the heat value of Ash,

five times that of Hickory and Walnut, and ten times that of Oak. It must be remembered that these figures are only approximations, but they are quite certainly below rather than above, so far as the Carolina Poplar is concerned.

#### OBJECTIONS TO THE CAROLINA POPLAR.

That the Carolina Poplar is not without its drawbacks is evident from the objections made by many who have grown it. By some it is positively stated to be much shorter-lived than the common cottonwood, the length of life being given as low as ten to twelve years. That this cannot be their normal length of life is quite certain from the growth of trees under my personal observation. Near Lincoln are trees 17 years old which are about 60 feet in height, and 15 to 17 inches in diameter. Other trees, 15 years old, are about 50 feet in height and 12 inches in diameter.

It is quite certain that many Carolina Poplars suffer greatly from the attacks of borers, especially when the trees are isolated. This difficulty is apparently not as great when the trees are grown in compact plantations.

Still another objection is brought against this tree, and that is that its planting keeps out better trees. In many places, this is without doubt a valid objection, and full weight should be given to it. In many cases, it is far better to plant trees of acknowledged superior qualities, and in such places the planting of the Carolina Poplar is no doubt detrimental, and should not be encouraged. On the other hand, as has already been said, there are many more cases where a rapidly-growing tree, even of inferior quality of wood, is of the utmost importance and usefulness. To the man in the midst of the plain or the prairie, where the need of shade and fuel is a most urgent one, no harm will come from the planting of this or any other rapidly-growing, soft-wooded tree.

#### THE NAME "CAROLINA POPLAR."

It is the opinion of some persons who have become interested in the question of the value of this tree that the name "Carolina Poplar" is of recent introduction, one correspondent going so far as to say that its use probably did not exceed twenty years, and that "the name has been given in order to defraud the people, by causing them to think they were getting something different from the cottonwood."

The earliest use of the name Carolina Poplar was by Aiton in the first edition of the "Hortus Kewensis," published in 1789 under his original description of *Populus angulata*. In the second edition of this work, published in 1813, the description of *Populus angulata* is considerably improved, while the name Carolina Poplar is retained.

The name Carolina Poplar was used by Michaux in "Histoire des Arbres Forestiers" in 1813, and in his "North American Sylva," which was first published in 1819, and in the later editions in 1842 and 1853.

and later (1857). In both works and all editions one of the poplars (*Populus angulata*) is described under the English name "Carolina Poplar," and it agrees in every respect with the tree we are now considering.

Decaisne and Naudin in their "Manuel de l'Amateur des Jardins" (1866) describe *Populus angulata*, naming it the Carolina Poplar (peuplier de la Caroline).

In Hemsley's "Handbook of Hardy Trees, Shrubs and Herbaceous Plants" (1877) the name Carolina Poplar is applied to *Populus angulata*.

In the "Dendrologie" of Koch, published in 1872, *Populus angulata* is called the "Carolinische Pappel" (Carolina Poplar).

In Dippel's "Handbuch der Laubholzkunde" (1892) *Populus angulata* is called the "Karolinische Pappel" (Carolina Poplar) and this name is applied also to the variety *serotina*, which is known in the staminate form only.

In Koehne's "Deutsche Dendrologie" (1893) *Populus angulata* is called the "Karolinische Pappel" (Carolina Poplar), including also the variety *serotina*.

Bailey ("Cyclopedia of American Horticulture," Vol. III, 1901) discusses the matter as follows: "*Populus deltoides* var. *caroliniensis*, Carolina Poplar. A very distinct tree in habit of growth, making a straight, upright or pyramidal head; leaves usually less distinctly deltoid, and more gradually taper pointed than *Populus deltoides*. Native.—The Carolina Poplar is much planted, and nurserymen consider it to be distinct from the Cottonwood. It differs in strict, straight appearance, and it is a most vigorous grower. It is much planted in Europe, where it is known as the Swiss Poplar. Its botanical position needs to be investigated."

#### IS IT A DISTINCT SPECIES?

Upon the question of the specific autonomy of *Populus angulata* the following additional citations of authority should be given full consideration.

Michaux in "Flora Boreali Americana" (1803) regards it (which he calls *Populus angulata*) as a distinct species.

Willdenow, in "Species Plantarum" (1805), describes *Populus angulata* as distinct from the common cottonwood.

Pursh, in "Flora Americae Septentrionalis" (1814) regards *Populus angulata* as a distinct species.

Eaton ("Manual of Botany for the Northern and Middle States of America," 3d edition 1822) gives a good description of *Populus angulata*, referring to the "wing-angled" character of the branches.

Elliott ("Sketch of the Botany of South Carolina and Georgia," vol. II, 1824) describes *Populus angulata* accurately and says that "the young branches are all winged and angled by the decurrent petioles or by the junction of different branches, and these vestiges are not effaced for several years."

In Eaton and Wright's "North American Botany," 8th edition, 1840, *Populus angulata* is described by the side of *Populus monilifera*, from which it is regarded as distinct.

Gray, in the first edition of his "Manual of the Botany of the Northern United States" (1848), regarded *Populus angulata* as distinct from the cottonwood. This distinction was maintained through the successive editions to and including the fifth, which appeared in 1867 (with reissues up to at least ten years later). In the sixth edition, which appeared in 1890, *Populus angulata* is included without comment under the common cottonwood.

In Wood's "Class-book of Botany" (1868), *Populus angulata* is described as distinct from *Populus monilifera*, and is given the English name of "Water Poplar" or "Western Cotton Tree."

In Wesmael's treatment of the species of the genus *Populus* in De Candolle's "Prodromus" (1868), *Populus angulata* is regarded as certainly different from *Populus canadensis* (*P. monilifera*). The differential characters are, the scarcely gummy buds, the more prominently angled branches, which are brown (instead of gray or brownish green), and the larger leaves, which have red or yellow petioles and primary veins.

Vasey in his "Catalogue of the Forest Trees of the United States" (1878) distinguishes *Populus angulata* from the common cottonwood.

In his "Report on the Forests of North America," published in the reports of the Tenth Census (1884), Professor Sargent includes *Populus angulata* under the common cottonwood (*P. monilifera*). To the latter scientific name he applies the English name of Carolina Poplar as well as Cottonwood. In Volume IX of the "Silva of North America" (1896) the same author includes *Populus angulata* under the Cottonwood (here called *P. deltoidea*), and says "*P. deltoidea* is sometimes called the Carolina Poplar in European gardens."

In Britton and Brown's "Illustrated Flora of the Northern States and Canada" (1896), *Populus angulata* is included under *Populus deltoidea*, the Cottonwood, and at the end of the description it is said that it is "also called Carolina Poplar." The same treatment is given these two trees in both the first (1901) and second (1905) editions of Britton's "Manual of the Flora of the Northern States and Canada."

It may be helpful to call attention here to the treatment of the poplars in Dode's "Extraits d'une Monographie inedite du Genre Populus" (1905), which has recently appeared. In this work those true poplars which have flattened petioles are separated into four groups, viz.: *Caroliniensis*, *Fremontii*, *Virginiana* and *Nigra*. These may be regarded as species, each containing several varieties, or as groups of species. The group *Caroliniensis* is characterized by the very angular branchlets, and contains three species, only two of which interest us here.

*Populus caroliniensis* Fougér.—Leaves elliptio-deltoid, truncate and a little heart-shaped at base, very little acuminate at apex; petioles very red. In Dode's cultures only staminate trees of this species were grown.

*Populus angulata* Michx.—Leaves deltoid or rotund-deltoid, heart-shaped at base, acuminate at apex; petioles red. In Dode's cultures only pistillate trees of this species were grown.

The group *Virginiana* is characterized by the less-angled branchlets, and four species. Here we find our common cottonwood, which according to Dode are not of one species, as we have supposed, but of two or more closely related species.

The foregoing would indicate that the Carolina Poplar should be given a name distinct from the common Cottonwood, and I had reached this conclusion when a new phase of the question came up. For some time those botanists who had studied the Carolina Poplar and the Cottonwood had been in doubt as to whether we were not confusing more than one species of Cottonwood under one name. This has now been decided to be the case, and the eastern Cottonwood is considered to be the tree to which the name *Populus deltoides* was given by Marshall in 1785. This was for a long time erroneously supposed to be identical with the western Cottonwood which is so abundant along the Missouri river and the streams westward, but the western species is now considered to be distinct, and has been given the appropriate name of *Populus occidentalis*, or Western Cottonwood. We thus have an eastern and a western species of Cottonwood, as named above.

Now, what effect will this have on the name of the Carolina Poplar? From what has been said in this paper it is clear that the Carolina Poplar is entirely distinct from our Cottonwood, that is the western species. It is not so clear, however, whether it is distinct from the eastern species, but I have shown above that many botanists have regarded it as distinct, and even so late a writer as Professor Bailey has considered it to be at least of a different variety. I cannot decide this matter here, nor need I do so since the eastern Cottonwood is not planted in this region. It is sufficient to show that the Carolina Poplar is certainly of a different species from our western Cottonwood. My present inclination is to treat these trees as follows:

Eastern Cottonwood—*Populus deltoides*.

Carolina Poplar—*Populus angulata*.

Western Cottonwood—*Populus occidentalis*.\*

#### CONCLUSIONS.

*Name.*—What shall we call our Carolina Poplar in view of the foregoing discussion? To the writer of this paper the answer seems to be

\* Note.—Incidentally I might say here that this Western Cottonwood is but one species, and that the names "White Cottonwood" and "Yellow Cottonwood" are not the names of different species. When the tree is young and growing vigorously its wood is whiter and tougher, but as it becomes older the wood takes on a yellowish color, and loses much of its toughness, so that it can be worked much more easily. The first is what has been called "White Cottonwood" and the second "Yellow Cottonwood."



quite evidently that we can do no better than to give it the name by which it was universally known in this country for nearly a hundred years, and by which it is still generally known in Europe, viz., *Populus angulata*. Apparently the tree as generally planted is staminate only.

*Shall We Plant It for Shade?*—In spite of the fact that it is said to be shorter-lived than the common Cottonwood, the Carolina Poplar can be recommended for planting where shade and protection are wanted in the shortest possible time. The fact that only the staminate trees are propagated assures planters that they will not be troubled by the disagreeable "cotton" which the pistillate trees of this genus produce.

*Shall We Plant It for Fuel?*—As in the foregoing question this may be answered safely in the affirmative where the quickest returns are desired. It must be remembered that this tree requires a good deal of of moisture, and that it will not thrive on dry soil. For fuel it should be planted where it can obtain all the water it needs.

*Shall We Plant it for Lumber?*—From present information, the answer to this question should be negative. The common Cottonwood will produce a larger tree in a given time, and is apparently longer lived, so that where lumber of this quality is desired, it will be wiser to plant the Western Cottonwood, *Populus occidentalis*, rather than the Carolina Poplar, *P. angulata*.

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# TREES OF LINCOLN AND VICINITY.

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## THE TREES OF LINCOLN AND VICINITY.

BY C. R. TILLOTSON, FORESTRY DEPARTMENT, STATE UNIVERSITY.

A part of the work of systematic botany in the University of Nebraska consists of the identification and the making of a list of the trees on the University campus. Last autumn, Mr. R. G. Steele and myself made a list of trees found on the campus, and then becoming curious to know how many and what species of trees were growing in and around Lincoln we decided to make a list of such trees as we could find growing in this vicinity. To do this we examined pretty carefully trees growing in all parts of the city, those at the State Farm, those at Wyuka cemetery, and those growing along Salt creek as far south as the penitentiary. We do not claim that this list comprises all the species, both native and exotic, growing here, for it is highly probable that we have missed some. Of the trees which we found, thirty-seven are foreign species, and sixty-seven are native to the United States, and of these sixty-seven, thirty-nine are native to Nebraska.

With the exception of five trees growing along Salt creek, it is interesting to note that all of these trees are growing, and the majority of them growing well, in Lincoln, at the State Farm, or at Wyuka cemetery, all of this territory being at one time a part of the open prairie or treeless region. It is true that these trees, especially those in the city, are to some extent protected from the cold winds of winter by the surrounding houses which not only serve to break the force of the wind but which are also giving off warmth at all times from their chimneys. These houses also serve to protect the trees from the hot winds of the summer. Although the trees do derive some benefit from the protection afforded by the houses, it is well to bear in mind that it is claimed that many trees do not grow well in the smoke and dust of a city. In all probability, this is true in cities where the amount of smoke and dust is excessive. In Lincoln, however, these two factors seem to exert no harmful influence on the trees growing here. Neither do the trees suffer from a lack of moisture. Although probably the larger per cent of the trees in Lincoln are growing in a heavy sod, irrigation is practiced little if any, and the annual rainfall is only a fraction over twenty-eight inches, yet the trees seem to get enough water to satisfy their need. The nature of the soil is often an important factor in determining the species of trees which will grow in a region. Broadly speaking, the surface soil at Lincoln is a rather light and loose-textured, loamy clay, which is underlaid by a retentive clay or sandy subsoil.

The descriptions of these trees have been drawn and verified from books in the Botanical and Forestry libraries. In the arrangement of the list, Dr. Bessey's order of classification has been followed.

## FAMILY PINACEAE—THE PINE FAMILY.

This is the family to the trees of which the name evergreen is commonly applied. This name, however, is somewhat misleading as well as incorrect, since some species, as the larch and bald cypress, shed their leaves each autumn, and other species not belonging to this family, such as the live oak, do not shed their leaves upon the approach of winter. Generally speaking, however, this family may be recognized by the resinous, usually evergreen, sharp-pointed, narrow or scale-like leaves and the cones. To this family belong the following genera: *Pinus*, *Larix*, *Picea*, *Tsuga*, *Pseudotsuga*, *Abies*, *Sequoia*, *Taxodium*, *Libocedrus*, *Thuya*, *Cupressus*, *Chamaecyparis*, and *Juniperus*.

*Araucaria excelsa* Robt. Brown. Norfolk Island Pine.

Leaves curved, needle shaped, not in clusters,  $\frac{1}{4}$  to  $\frac{3}{4}$  inches long, densely packed on branches. Branches frond-like, horizontal or drooping. This tree is strictly a tropical one and is scarcely ever seen in this region except in greenhouses. Two specimens about 10 feet tall were growing on the University of Nebraska campus last autumn.

*Pinus strobus* L. White Pine.

Leaves needle-shaped, 5 in a sheath, 3 to 5 inches long. A beautiful tree, with soft foliage, greenish-brown colored bark when young, and with branches in regular whorls, usually of five branches. Not native to Nebraska, but grows well in the eastern part of the state. A specimen about 30 feet high may be seen in Wyuka cemetery.

*Pinus austriaca* Hoss. Austrian Pine.

Leaves needle-shaped, 2 in a sheath, 4 to 6 inches long. A sturdy-looking tree with wide-spreading branches and grayish, flaky bark. Not native to United States, but is one of the most extensively planted pine trees in eastern Nebraska. Grows well and rapidly in this section of the state.

*Pinus ponderosa* Laws. Bull Pine.

Leaves needle-shaped, 5 to 11 inches long, usually 3 in a sheath. A tree which attains massive proportions. Resembles the Austrian Pine in general appearance. Not native to Nebraska, but grows well here. Very hardy and drought-resistant. Especially adapted for planting in the sand-hills region.

*Pinus scopulorum* Rydg. Bull Pine.

Leaves needle-shaped, 3 to 6 inches long, generally 2, sometimes 3 in a sheath. This tree is generally considered as merely a variety of *P. ponderosa*, which it closely resembles in all its characteristics. It is native to western Nebraska and is being planted rather extensively there. Specimens of this tree may be seen at the State Farm.

*Pinus sylvestris* L. Scotch Pine.

Leaves needle-shaped,  $2\frac{1}{2}$  to 4 inches long, 2 in a sheath. A rapid-growing but short-lived tree. Easily distinguished by the orange-colored

bark of the upper part of the trunk, especially on old trees. Not native to United States, but is one of the most extensively planted of pines in eastern Nebraska. The tree grows well in this region and it is thought that it will do well in western Nebraska.

*Pinus divaricata* Du Mont de Coura. Jack Pine.

Leaves needle-shaped,  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches long, 2 in a sheath. Young foliage light yellowish-green. Leaves twisted. Winter buds very resinous. A small tree of little commercial value. Not native to Nebraska, but grows well in western part of the state when planted. A specimen of this tree, about 15 feet high, may be seen at the State Farm.

*Pinus lambertina* Dougl. Sugar Pine.

Leaves needle-shaped,  $3\frac{1}{2}$  to 4 inches long, 5 in a sheath. This tree is one of the western white pines. The locality in which it grows distinguishes it from *P. strobus*, there being very little difference in the appearance of the two trees. Not native to Nebraska. A small specimen may be seen at the State Farm.

*Larix decidua* Miller. European Larch.

Leaves awl-shaped, flattened, spirally disposed and remote on leading shoots, borne in many-leaved clusters on the older branches,  $\frac{3}{4}$  to 1 inch long, becoming yellow and dropping off each autumn. The branches of this tree are decidedly spreading, making its crown an open one. The tree is not native to the United States, but is recommended for planting for fence post material, as its wood is very durable. Several specimens of this tree are growing at the State Farm.

*Picea canadensis*, B. S. & P. White Spruce. Black Hills Spruce.

Leaves needle-shaped, 4 sided, crowded on the upper side of the branches by the twisting of those on the lower side, 1-3 to  $\frac{3}{4}$  inch long. An exceedingly hardy, but not a very ornamental tree, owing to the dull color of its foliage. Not native to Nebraska.

*Picea parryana* Sarg. Colorado Blue Spruce.

Leaves needle-shaped, 4 sided, strongly incurved, 1 to  $1\frac{1}{4}$  inches long. This tree is one of the most beautiful of our conifers. Its foliage is of a light-blue color, changing to a dull blue-green at the end of three or four years, and is characterized by a pungent odor. Not native to Nebraska, but grows well throughout the state.

*Picea excelsa* Link. Norway Spruce.

Leaves quadrangular, pointed, dark green and usually shining,  $\frac{1}{2}$  to 1 inch long. Branches spreading and slightly ascending; branchlets very pendulous. This last characteristic will serve to distinguish this tree from other spruces. It is a very handsome and rapid-growing tree, and is widely planted for ornamental purposes. It is also an excellent tree to plant for shelter and windbreaks. Not native to the United States. Grows well in eastern Nebraska.

*Pseudotsuga mucronata* Sudw. Douglas Spruce.

Leaves needle-shaped, flattened, spirally arranged, spreading nearly at right angles to the branch,  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches long. Winter buds large, deep red in color, and very sharp pointed. This tree takes on the form of a rather open pyramid and is extensively planted for ornamental purposes. It is not native to Nebraska, but does well in the eastern part of the state. Some good specimens may be seen in Wyuka cemetery.

*Abies concolor* Lindl. & Gord. White Fir.

Leaves flat, 2 to 3 inches long, 1-16 to  $\frac{1}{8}$  inch wide, crowded, and spreading in two ranks on the branches. This is one of our most beautiful as well as most hardy conifers. The foliage is pale blue or gray in color and forms a dense spire-like crown. Not native to Nebraska, but can be successfully planted throughout the state.

*Taxodium distichum* (L.) L. C. Rich. Bald Cypress.

Leaves spirally disposed, either narrowly lance-shaped, about  $\frac{1}{2}$  to  $\frac{3}{4}$  inch long, spreading in two ranks, or scale-like, about  $\frac{1}{2}$  inch long, overlapping each other on the branchlets. This tree is decidedly a southern one and is seldom seen in this region. Its bark is flaky, in thin strips, and its leaves are shed each fall. A specimen of this tree, about 15 feet tall, may be seen in Wyuka cemetery.

*Thuja occidentalis* L. Arbor-vitae.

Leaves flattened,  $\frac{1}{8}$  to  $\frac{1}{4}$  inch long, some overlapping each other and compressed, others spreading or reflexed. The branchlets are pendulous, flattened laterally, and disposed in one horizontal plane, giving them the appearance of having been pressed between two heavy bodies. This tree is a pretty but rather odd-looking one for ornamental purposes. Not native to Nebraska, but does fairly well in the eastern part of the state.

*Juniperus communis* L. Trailing Juniper.

Leaves awl-shaped and tipped with sharp, slender points, 1-3 to  $\frac{1}{2}$  inch long and 1-32 inch wide, dark green and lustrous on the lower surface, snowy white on the upper surface. This tree, as its name indicates, is a low trailing thing, resembling somewhat in its general appearance the Red Cedar. Native to northern Nebraska, very hardy, but does not attain a large enough size to be of any importance except for ornamental purposes.

*Juniperus virginiana* L. Red Cedar.

Leaves mostly in opposite pairs, those on the younger branches awl-shaped,  $\frac{1}{2}$  to  $\frac{3}{4}$  inch long and standing nearly at right angles to the branchlets, those on the older branches scale-like, about 1-16 inch long, and appressed. This tree is rather easily distinguished by its red, stringy bark and the rusty color of its foliage in the winter. It is native to eastern Nebraska, is very hardy, and produces excellent lumber for posts. It is a slow grower, however, and because of the cedar rust fungus should never be planted near apple orchards.

## FAMILY MAGNOLIACEAE. THE MAGNOLIA FAMILY.

*Liriodendron tulipifera* L. Tulip Tree.

Leaves very broadly ovate or nearly circular in outline, rounded or heart-shaped at the base, 5 to 6 inches long and broad, with 2 apical and 2 to 4 basal lobes with rounded sinuses. Flowers tulip-like. This is the tree which furnishes us the wood known as yellow poplar. It makes a beautiful ornamental tree. Not native to Nebraska. A young tree which appears to be growing well may be seen on the lawn of the residence on the southeast corner of Thirteenth and J streets.

## FAMILY TAMARICACEAE. TAMARISK FAMILY.

*Tamarix gallica* L. Tamarisk.

Leaves rhombic-ovate, acute or acuminate, half clasping the stem, dull to bluish-green, closely imbricated. Flowers white or pinkish, almost sessile, in slender, paniced racemes. Branches reddish, slender, spreading. This is a pretty little tree, rarely exceeding 15 feet in height, whose foliage looks from a short distance like so much moss. Native to southern Europe.

## FAMILY SALICACEAE. WILLOW FAMILY.

*Populus alba* L. White Poplar.

Leaves broadly ovate or nearly orbicular, 3 to 4 inches long, smooth and dark green above, very wooly and silvery-white beneath, 3 to 5 lobed or irregularly toothed. Bark silvery-white and smooth except near base of old trees, where it is rough and dark grey in color. This tree is the one which is commonly called the silver maple owing to the color of the under surface of its leaves. It is not native to the United States, but grows well here in most situations.

*Populus candicans* Ait. Balm of Gilead.

Leaves broadly heart-shaped, more deeply scalloped than those of the Balsam Poplar, 3 to 5 inches long,  $1\frac{1}{2}$  to 3 inches wide. Winter buds very large, often 1 inch in length, and very resinous. This tree is not native to Nebraska, but it is thought by some to be merely a variety of Balsam Poplar, which is native to northwestern Nebraska. The tree is very hardy, moisture loving, and distinctly a northern species. Often planted in the north for shelter or ornament.

*Populus angustifolia* James. Narrow-leaved Cottonwood.

Leaves lance-shaped, bright yellow-green above, paler below, 2 to 3 inches long,  $\frac{1}{2}$  to 1 inch wide, and finely toothed, or, on vigorous shoots, sometimes 6 to 7 inches long,  $1\frac{1}{2}$  inches wide, and more coarsely toothed. Petioles plano-convex, not flattened laterally. Winter buds very resinous, terminal ones  $\frac{1}{4}$  to  $\frac{1}{2}$  inch long. This tree is native to northwestern Nebraska, is usually found at elevations of 5,000 to 10,000 feet, and like all poplars is water loving. A small specimen may be seen at the State Farm. As its name indicates, the special characteristic of this tree is its narrow leaves.



*Populus acuminata* Rydb. Rydberg's Cottonwood.

Leaves rhombic lance-shaped, abruptly tapering to the apex, gradually or abruptly narrowed and wedge-shaped at the base, finely-toothed except near the apex, 2 to 4 inches long,  $\frac{3}{4}$  to 2 inches wide. Branchlets yellow-brown and slightly 4-angled. This tree is native to western Nebraska, where it is found along the streams. For a cottonwood, it reaches a comparatively small size. A small specimen may be seen at the State Farm.

*Populus occidentalis* (Rydb.) Britton. Cottonwood.

Leaves broadly triangular-ovate shaped, tapering at the apex, slightly heart-shaped or abruptly wedge-shaped at the base, coarsely-toothed except at the base, 3 to 5 inches long and broad, with stout, yellow midribs, often tinged with red at the base. Petioles yellow and compressed laterally. Forms a large, open, spreading head. This is our common cottonwood, which grows so abundantly throughout the state in moist situations. It is the largest of the poplars.

*Populus angulata* Aiton. Carolina Poplar.

The leaves of this tree resemble those of our common Cottonwood, except that they are about once and a half as large and taper more abruptly at the apex. Petioles reddish and compressed laterally. Forms a closer, much more conical-shaped head than the common cottonwood. This tree is not native to Nebraska, but grows well in moist situations throughout the state. It is more commonly planted for ornamental purposes than is the cottonwood.

*Populus tremuloides* Michaux. American Aspen.

Leaves ovate or half-circular in outline, abruptly narrowed at the apex into short, broad points, regularly, rather-finely toothed with small, incurved, callous teeth except at the slightly heart-shaped base,  $1\frac{1}{2}$  to 2 inches long and broad. Petioles very slender and flattened laterally, causing the leaves to tremble in the slightest breeze. This characteristic gives to the tree the popular name of Quaking Asp. Bark a beautiful light green. The bark and trembling leaves of this tree make it highly desirable for ornamental purposes. Native to Nebraska. Grows well either in moist or rather dry situations.

*Salix nigra* Marsh. Black Willow.

Leaves lance-shaped, gradually narrowed above into long, tapering, usually curved tips, wedge-shaped or rounded below, finely toothed, often hairy on the under side of the midrib and veins and on the short, slender petioles. Rough, flaky, brown bark. Branchlets rather bright reddish-brown to pale orange-colored. Forms a broad, irregular, open head. This is our most common willow and is found along the banks of all streams in the eastern part of the state.

*Salix vitellina* L. Yellow Willow.

Leaves lance-shaped, very gradually tapering, 2 to 4 inches long,

$\frac{1}{2}$  to  $\frac{3}{4}$  inch wide, finely-toothed, silky-hairy when young. Bark golden yellow in color. This tree forms a rounded, open crown, and attains a fairly large size. It is not native to the United States, but is planted quite extensively here as an ornamental tree. A small specimen may be seen on the University campus.

*Salix amygdaloides* Anders. Peach-leaved Willow.

Leaves lance-shaped, narrowed at the base, 4 to 6 inches long, about one inch wide, pubescent when young, smooth above and slightly pubescent beneath when old, sharply toothed. The leaves of this tree resemble those of the peach tree. Native to Nebraska. Some of these trees may be seen on the banks of Salt creek near Lincoln Park, where they have reached the height of about 30 feet.

*Salix babylonica* L. Weeping Willow.

Leaves lance-shaped, narrowed at the base, toothed all around, sparsely-hairy when young. There are many forms of this willow, whose leaves vary in size and shape, and whose bark varies in color. The original tree is a native of Asia. Any one of the varieties may be recognized by their decidedly drooping branchlets. Commonly planted for ornamental purposes.

*Salix missouriensis* Bebb. Missouri Willow. "Diamond Willow."

Leaves lance-shaped or inversely lance-shaped, gradually narrowed from above the middle to the wedge-shaped or rounded base, gradually tapering and long-pointed at the apex, finely-toothed with glandular teeth, 4 to 6 inches long, 1 to  $1\frac{1}{2}$  inches wide. Petioles stout,  $\frac{1}{2}$  to  $\frac{3}{4}$  inch long. Branchlets light green and coated during their first year with thick, pale pubescence. Heartwood dark red-brown. This tree is native to Nebraska and is found growing along the streams. Specimens may be found along Salt creek.

*Salix pentandra* L. Laurel-leaf Willow.

Leaves large, elliptic to broadly-oblongate, gradually tapering to a point, shining and dark green above, paler beneath. The size, luster, and fragrance of the leaves of this species serve chiefly to distinguish it from other species. It does not grow very large, and makes a very pretty ornamental tree. A small specimen may be seen at the State Farm. Not native to the United States.

*Salix interior* Rowlee. Sandbar Willow.

Leaves very narrowly lance-shaped or often somewhat scythe-shaped, gradually narrowed at the ends, long pointed, toothed, with small, remote, spreading, callous teeth, 2 to 6 inches long,  $\frac{1}{8}$  to 1-3 inch wide. Petioles grooved,  $\frac{1}{8}$  to  $\frac{1}{4}$  inch long. Branchlets slender, smooth, light or dark orange-colored or purplish-red. This tree is native to Nebraska and is very common along the streams. The length and slenderness of its leaves serve to distinguish it from other species of willows. In Nebraska it rarely reaches a height of more than 15 to 18 feet.

*Salix eriocephala* Michaux. Pussy Willow.

Leaves oblong or inversely oblong-ovate, gradually narrowed at the ends, irregularly finely toothed or entire, finely tomentose beneath and hairy on the veins, 3 to 5 inches long,  $\frac{3}{4}$  to  $1\frac{1}{2}$  inches wide. A shrub or low tree with dark, reddish-purple branchlets. Winter buds dark red and about  $\frac{1}{2}$  inch long. Not native to Nebraska, but seems to do well in this part of the state. A specimen may be seen in Wyuka cemetery.

#### FAMILY RUTACEAE. RUE FAMILY.

*Citrus medica* var. *limon* L. Lemon.

Leaves ovate-oblong, crenate or serrate, 3 to 4 inches long, giving off when crushed a very pleasant lemon odor, their petioles short and usually slightly winged, light green in color. Young branches smooth, yellowish-green, armed with thorns, 1 to 2 inches long. Fruit medium sized, yellow, round, ovate, or elliptical, mostly mamillate; rind thin, aromatic; pulp abundant, very juicy and acid. Native to India. A small specimen bearing fruit may be seen in the State Farm plant-houses.

#### FAMILY SIMARUBACEAE. QUASSIA FAMILY.

*Ailanthus glandulosa* Desfontaine. Tree-of-Heaven.

Leaves compound,  $1\frac{1}{2}$  to 3 feet in length, with a long petiole greatly swollen at the base. Leaflets 13 to 41, stalked, ovate or ovate-lanceolate, cordate or truncate and often oblique at the base, which is characterized by two or more singular, dull teeth. Flowers greenish, about 6 mm. broad, pedicelled, in terminal panicles, the staminate ones ill scented. Fruit a single, twisted samara nearly 5 cm. long. Branchlets very thick, club-shaped, filled with a reddish pith, and marked by large, horseshoe-shaped, leaf scars. Bark light gray, peculiarly mottled. In summer this is a very graceful-looking tree, and it has been rather widely planted for ornament. Does well in this portion of the state. Native to China.

#### FAMILY TILIACEAE. LINDEN FAMILY.

*Tilia americana* L. Basswood.

Leaves heart-shaped, sometimes almost truncate at the base, contracted at the apex into slender, acuminate, entire points, coarsely serrate, glabrous, with the exception of tufts of rusty brown hairs in the axils of the principal veins beneath, thick and firm, 5 to 6 inches long, 3 to 4 inches broad. Fruit resembling peas, hanging suspended from a thin stem, half of which appears to be merged in a leaf-like brown wing, called a bract, which tapers at the base. Winter buds dark red, ovate, about  $\frac{1}{4}$  inch long, and humped. Bark light gray on young wood, darker, deeply furrowed, and broken into small, thin scales on older wood. This is a pretty tree, very sweet scented when in blossom, which is native to eastern Nebraska and which is extending its range along the streams westward.

*Tilia ulmifolia* Scopoli. European Linden.

Leaves heart-shaped, small, thin, green above, silvery beneath, serrate, with tufts of rusty hairs in the axils of the veins. Bark smooth, and is uniformly of the same color as that of a cherry tree. Winter buds red and humped. This tree, as well as all European Lindens, is distinguished from the American Lindens by the fact that the flowers are destitute of the petal-like scale among the stamens, which is a marked characteristic of all American Lindens. A nice specimen of this tree may be seen at the northeast corner of Twenty-seventh and O streets. Native to Europe.

*Tilia tomentosa* Moench. White or Silver Linden.

Leaves suborbicular, 3 to 5 inches across, unequally cordate, serrate, densely white tomentose beneath; blade 2 to 4 times longer than the petiole. Fruit hanging to a wing-like appendage, tomentose, globose, and slightly ribbed. Bark light gray. Forms a pyramidal, rather dense and compact head. This is the larger "White Lime" of Europe. Like its American brothers, it makes a beautiful shade tree. A small specimen may be seen on the University campus.

*Tilia vulgaris* Hayne. Berlin Linden.

Leaves large, unequally or obliquely cordate, serrate, smooth and green on both sides, tufts of hair in axils of veins beneath whitish. Fruit globose or oval, tomentose, thick shelled, attached to a wing-like appendage. Bark light gray. Winter buds red and humped. This is the celebrated species of Berlin and is widely sold here under the name of *Tilia europaea*. A small specimen may be seen at the State Farm.

#### FAMILY ULMACEAE. ELM FAMILY.

*Ulmus americana* L. White Elm.

Leaves inversely ovate-oblong to oval, abruptly narrow at the apex into long points, full and rounded at the base on one side and shorter and wedge-shaped on the other, coarsely doubly-toothed, 4 to 6 inches long, 1 to 3 inches wide, rough only when rubbed one way. Winter buds brown, smooth, ovate, slightly flattened. Branchlets slender and graceful. This tree is a very desirable one for lawn or street planting because of its gracefulness, even in winter, and because it is free from branches for a considerable distance above the ground. Native to Nebraska. Does well even in some portions of the western part of the state.

*Ulmus fulva* Michaux. Slippery or Red Elm.

Leaves ovate-oblong, abruptly contracted into long, slender points, rounded at the base on one side and short, oblique on the other, more coarsely doubly-toothed than the White Elm, coated below, especially on the thin midribs and in the axils of the slender, straight veins, with white hairs, 5 to 7 inches long, 2 to 3 inches broad, rough when rubbed either way. Winter buds ovate, rounded, and densely covered with rusty hairs.

Bark smoother than that of White Elm. Inner bark mucilaginous. A tree which resembles very much in appearance the White Elm, but is a better tree for commercial purposes. Native to eastern Nebraska.

*Ulmus scabra* Miller var. *pendula* Loudon. Camperdown Elm.

Leaves broadly obovate to oblong-obovate, abruptly tapering to a point or sometimes 3-lobed at the apex, unequal at the base, sharply and doubly-toothed, rough above, pubescent beneath, 3 to 6 inches long, 3 to 4 inches wide. Branchlets and buds pubescent. Branches long and pendulous, spreading horizontally or even bending over and pointing toward the ground. This pendulous habit of the branches is the most distinguishing characteristic of the tree. It is not native to the United States, but is widely planted for ornamental purposes.

*Ulmus campestris* Smith. English Elm.

Leaves broadly ovate to ovate oblong, unequal at the base, gradually tapering to a point, doubly-toothed,  $1\frac{1}{2}$  to 5 inches long, distinctly petioled. In its form and slenderness of its branchlets, this tree resembles somewhat our White Elm. Its leaves, however, are generally smaller and remain on the tree several weeks longer than do those of our White Elm. It is a very pretty tree either for lawn or avenue planting. Not native to the United States. A couple of specimens may be seen on the University campus.

*Celtis occidentalis* L. Hackberry.

Leaves broadly ovate, more or less scythe-shaped, gradually or abruptly contracted into long, narrow points, rounded and usually very oblique at the base, coarsely-toothed except at the ends,  $2\frac{1}{2}$  to 4 inches long, 1 to 2 inches wide. Petioles slender, hairy,  $\frac{1}{2}$  to 2-3 inch long. Branchlets very slender. Bark divided in parallel, prominent ridges. This tree is a rather beautiful shade and ornamental one, otherwise it is not of much value. Native to Nebraska and does well in the western part of the state.

#### FAMILY MORACEAE. MULBERRY FAMILY.

*Morus alba* L. White Mulberry.

Leaves light green, heart-shaped or ovate, mostly toothed, the teeth large and for the most part rounded, smooth or very nearly so above and often shining, the veins prominent beneath and whitish, 3 to 4 inches long,  $1\frac{1}{2}$  to 2 inches wide, variously lobed or divided. Branches gray or grayish-yellow. Small branchlets at end of branches arise in bunches, giving these branches a bushy appearance. Fruit 1 to 2 inches long, white or violet in color. Sap milky. This tree is a profuse brancher and makes an excellent one for windbreaks. Not native to the United States. Grows well in Nebraska.

*Toxylon pomiferum* Raf. Osage Orange.

Leaves ovate lance-shaped or ovate oblong, glossy, not toothed, 3 to 5 inches long, 2 to 3 inches wide, gradually tapering to a point at the

apex, base blunt or rounded, or somewhat heart-shaped. Branchlets light brown, slightly tinged with orange color during their first year. Tree armed with stout, straight spines. This tree is a very desirable one to plant for hedges, windbreaks, or for post material. It is not native to Nebraska, but grows well in the southern part, where the winters are not cold enough to kill it. If it were not for its winter-killing it would be a very desirable tree for western Nebraska, because it endures great extremes of drought.

FAMILY EBENACEAE. EBONY FAMILY.

*Diospyros virginiana* L. Persimmon.

Leaves oval, shortly acuminate at the apex, and abruptly or gradually narrowed or rounded or often cordate at the base, at maturity coriaceous, dark green and lustrous above, pale and often pubescent below, 4 to 6 inches long and 2 to 3 inches wide, with broad, flat midribs; their petioles stout, pubescent,  $\frac{1}{2}$  to 1 inch long. Forms no terminal bud. Bark of trunk is dark reddish-brown, deeply divided into rather square-looking sections. Fruit is 1 to  $1\frac{1}{2}$  inches in diameter, pale orange color, surmounted at the base by the enlarged, persistent calyx, edible after a frost. This is a southern tree, where it attains a large size. It is not very hardy this far north.

FAMILY OLEACEAE. OLIVE FAMILY.

*Fraxinus lanceolata* Borkhausen. Green Ash.

Leaves compound. Leaflets narrower and shorter, and usually more sharply serrate than those of Red Ash, 5 to 9 in number, bright green on both surfaces. Twigs of last year's growth not covered with a red pubescence. Otherwise this tree resembles very closely the Red Ash. It is very hardy and has been planted with much success in the western part of the state. Native to all parts of Nebraska.

*Fraxinus quadrangulata* Michaux. Blue Ash.

Leaves compound, 8 to 12 inches long, with slender petioles. Leaflets 5 to 9, ovate-oblong to lanceolate, unequally rounded or wedge-shaped at the base, sharply serrate, 3 to 5 inches long, 1 to 2 inches wide, with broad petiolules about  $\frac{1}{2}$  inch long and grooved on the upper side. Young branchlets 4-angled and slightly winged. Fruit a single samara, 1 to 2 inches long, with a wing conspicuously notched at the apex and nearly 1 inch wide. Winter buds dark reddish-brown, slightly puberulous or often hoary tomentose. Bark of the trunk dark gray and separating into large plate-like scales. Bark of younger wood ash-colored. Inner bark, when steeped in water, gives up a blue dye. Branchlets rather coarse. This tree is not native to Nebraska nor is it grown very much here. Its wood is the best of the ash woods. A specimen may be seen at the State Farm.

*Fraxinus pennsylvanica* Marsh. Red Ash.

Leaves compound, 10 to 12 inches long, with stout, slightly grooved,

pubescent petioles. Leaflets 7 to 9, oblong-lanceolate or ovate, gradually narrowed at the apex into long, slender points, unequally wedge-shaped at the base, and obscurely serrate, or often entire below the middle, 4 to 6 inches long, 1 to 1½ inches wide, covered below and on the thick, grooved petiolules with silky pubescence. Fruit a single samara in open panicles, 1 to 2 inches long, surrounded at the base by the persistent calyx, ¼ to 1-3 inch wide, with a nearly terete body. Branchlets of last year's growth covered with a rusty pubescence. Winter buds large, dark brown, tomentose. Bark of branches ash-colored, that of trunks dark gray, furrowed, and separating into thin appressed scales. Native to all parts of Nebraska.

#### FAMILY BIGNONIACEAE. BIGNONIA FAMILY.

*Catalpa ovata* Don. Japanese Catalpa.

Leaves broadly cordate-ovate, abruptly acuminate, often 3-lobed, nearly glabrous at length, with reddish spots in the axils of the veins beneath, 5 to 8 inches long. Panicles many-flowered, 4 to 7 inches long. Flowers yellow, striped inside orange and spotted dark violet, about 1 inch in diameter. Fruit a pod, scarcely ever more than 1 foot in length and very slender, ¼ inch or less in diameter at the middle. Seed small, ½ inch long, 3-16 inch wide. Bark thin and flaky in strips. Resembles other catalpas in appearance, but generally does not reach a height of more than 20 feet. More hardy than the American Catalpas. Native to China.

*Catalpa Bungei* C. A. Meyer.

Leaves truncate at the base, long acuminate, 3 to 5 inches long. Flowers large, nearly white, in few flowered panicles. This tree resembles the *Catalpa ovata* very closely in general appearance. Native to China.

*Catalpa hybrida* Spath. Japan Hybrid Catalpa.

A hybrid between the *Catalpa ovata* and the *Catalpa bignonioides*. Leaves resemble those of *Catalpa ovata*, are purplish when unfolding, but are much larger and slightly pubescent beneath. Flowers in many-flowered panicles, about 2 inches in diameter, thickly spotted inside. This is a very valuable tree, flowering profusely, of rapid growth and hardy. Originated in Indiana.

*Catalpa catalpa* Karst. Catalpa.

Leaves heart-shaped, entire or often laterally 3-lobed, at maturity thin and firm, light green and glabrous on the upper, pale and pubescent on the lower surface, 5 to 6 inches long, 4 to 5 inches wide, with prominent midribs and primary veins, their petioles stout, terete, 5 to 6 inches in length. Flowers on slender pedicels in compact, many-flowered panicles, 8 to 10 inches long and broad; corolla white, 2 inches long, 1½ inches wide, plentifully spotted with yellow and purple. Fruit a pod, 8 to 20 inches long, ¾ to 1-3 inch thick at the middle, thin walled. Seeds 1

inch long,  $\frac{1}{4}$  inch wide, silvery gray, with two pointed wings, terminating in long, pencil-shaped tufts of white hairs. Branchlets thick and club-shaped. Bark light gray tinged with red, flaky. Forms no terminal bud. The only thing about this tree which can be said to be beautiful is its flower. It is a southern tree and is not very hardy this far north.

*Catalpa speciosa* Engelm. Hardy Catalpa.

Leaves resembling those of the common Catalpa except that they are less commonly lobed, 10 to 12 inches long, 7 to 8 inches wide. Flowers on slender, purple, glabrous pedicels, furnished near the middle with 1 to 3 bractlets, in open, few-flowered panicles, 5 to 6 inches long and broad. Corolla white, 2 inches long and  $2\frac{1}{2}$  inches wide, rather palely spotted with yellow and purple. Fruit a pod, 8 to 20 inches long, thick walled,  $\frac{1}{2}$  to  $\frac{3}{4}$  inches in diameter at the middle. Seeds 1 inch long, 1-3 inch wide, silvery gray, with two wings, rounded at the ends and terminating in a fringe of short hairs. Resembles the common Catalpa in appearance. This tree is also a southern one, but is much hardier than the common Catalpa. Grows well this far north, but is winter killed in the northern and western part of the state. An excellent tree for planting for posts.

#### FAMILY MALACEAE. APPLE FAMILY.

*Sorbus americana* Marsh. American Mountain Ash.

Leaves compound, 6 to 8 inches long. Leaflets 13 to 17 in number, lance-shaped, unequally wedge-shaped or rounded at the base, sharply toothed except at the base, dark yellow-green on the upper and pale on the lower surface, 2 to 3 inches long,  $\frac{1}{2}$  to 2-3 inch wide. Bark smooth, light reddish-brown in color. This tree forms a narrow, round-topped head, and makes a very pretty little tree for lawn planting. Not native to Nebraska, but the specimens growing here are doing very well. A pretty little tree may be seen at Wyuka cemetery.

*Pyrus communis* L. Common Pear.

Leaves mostly oblong-ovate, with a prominent point, hard in texture and veiny, bright green, the serratures small and much appressed and obtuse, or sometimes the leaf is almost entire. Flowers white with purple anthers, appearing with the leaves in umbel-like clusters on slender pedicels. Pedicels and sometimes the young growth pubescent. Bark resembles that of the apple tree. Fruit spurs persistent for many years, making the branches rather thorny. Fruit varying in size, tapering to the stem. The flesh generally a trifle gritty. The pear tree resembles the apple in general appearance except that it is more upright in growth, forming a closer, more conical-shaped head. Native to southern Europe and Asia.

*Malus ioensis* (Wood) Britton. Western Crab Apple.

Leaves ovate, oval or oblong, pointed or rounded at the apex, usually pointed or narrowed and rounded at the base, slightly 5 to 7 lobed,



toothed, dark green and lustrous on the upper surface, pale yellow-green and finely haired on the lower surface, 3 to 4 inches long,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches wide. Lateral branchlets ending in spines. Bark covered with long, narrow, persistent, red-brown scales. Fruit small and bitter. This tree is a small one, takes on a spreading form and is a very pretty little one for lawn planting. Native to eastern Nebraska. A nice specimen may be seen on the University campus.

*Malus malus* (L) Britton. Apple.

Leaves ovate or oval, rounded or slightly heart-shaped at the base, smooth or nearly so above, pubescent and often wooly beneath, rather coarsely toothed. Winter buds white tomentose. Bark scaly, reddish-brown in color. This is our common apple tree and needs no further description. Native to Europe.

*Malus prunifolia* Willdenow. Apple.

This is a tree which is a hybrid between the common apple and the Siberian Crab. In appearance, it closely resembles the common apple. Its fruit resembles very much the brittle and translucent texture of the Siberian Crab, but it is larger, commonly more starchy, and the calyx is persistent. A good specimen of this tree may be seen at the State Farm. Originated in Europe.

*Malus toringo* Siebold. Toringo or Dwarf Crab.

Leaves ovate or oblong-ovate in outline, bright, dark green above and thinly pubescent below, strongly notched or lobed on either side at or below the middle, the middle lobe often notched again near the top, the remaining margins sharply toothed. This is a small, dwarfy tree, bearing small, inedible fruit about the size of a large pea. This is a pretty, little tree for lawn planting. A specimen may be seen at the State Farm. Native to Japan.

*Crataegus mollis* Scheele. Red Hawthorn.

Leaves oblong-ovate or oval, pointed, rounded, broadly wedge-shaped or truncate at the base, usually divided above the middle into three or four pairs of short, broad, pointed lobes, serrate sometimes to the base, 2 to 3 inches long,  $1\frac{1}{4}$  to 2 inches wide, dull, dark green above, pale yellow-green and hairy below. Petioles stout, deeply grooved, more or less winged toward the apex, turning dark red after midsummer. Branches armed with occasional, straight, thick, shining, chestnut-brown spines, 1 to 2 inches in length. Branchlets hairy during their first season. Fruit  $\frac{3}{4}$  to 1 inch in diameter, scarlet colored, marked by occasional, large, dark dots; flesh thick, yellow, subacid, dry and mealy. Because it forms a beautiful, round-topped, spreading head this tree makes a very ornamental lawn tree. Native to eastern Nebraska.

#### FAMILY DRUPACEAE. PLUM FAMILY.

*Prunus americana* Marsh. Wild Yellow or Red Plum.

Leaves oval or slightly obovate, acuminate, narrowed and occasionally rounded at the base, and sharply and often doubly serrate, at maturity

thick and firm and more or less wrinkled, dark green on the upper, pale on the lower surface, 3 to 4 inches long,  $1\frac{1}{2}$  inches wide. Petioles slender,  $\frac{1}{2}$  to 2-3 inch long. Branches covered with spine-like, lateral branchlets. This is our common wild plum, found in this vicinity growing along the banks of the streams. Often cultivated in the east as an ornamental or fruit tree.

*Prunus demissa* (Nuttall) Walpers. Western Wild Cherry.

Leaves broadly oval to oblong-obovate, acute, acuminate, or abruptly short-pointed at the apex, subcordate, rounded, or rarely wedge-shaped at the base, and finely serrate; at maturity, thick, firm, dark green above and pale below, 2 to 4 inches long, 1 to 2 inches wide. Flowers in many-flowered, erect or nodding racemes, 3 to 6 inches long, pure white, 1-3 to  $\frac{1}{2}$  inch in diameter. Bark dark red-brown in color. This tree is native to western Nebraska. It is a small, bushy one, but bears a fruit which is both agreeable and edible.

*Prunus domestica* L. Common Plum.

Leaves ovate or obovate, coarsely and irregularly serrate, much wrinkled, usually pubescent beneath, firm and thick in texture, varying in size. Twigs pubescent. Fruit spurs persistent, forming sharp spines. Flowers white, usually in clusters. Bark light brown to nearly black. Flower stems usually more or less hairy. Fruit of many shapes and flavors, the stone large, flattened, slightly rough or pitted. Probably a native of the Caucasus region.

*Prunus avium* L. Sweet Cherry.

Leaves ovate, oval, or slightly obovate, abruptly short-acuminate, irregularly serrate, pubescent on the veins beneath. Flowers white, about 2.5 cm. broad, in scaly, lateral umbels, expanding with the leaves. Fruit dark red to black, sweet. Resembles the *Prunus cerasus* in appearance. This is our common sweet cherry. It differs from the sour cherry principally in that its fruit is decidedly sweet. Native to Europe.

*Prunus armeniaca* L. Apricot.

Leaves ovate to round-ovate, sometimes slightly cordate at the base, abruptly short-pointed, glabrous above, closely serrate, with long petioles. Flowers pinkish, 1 inch in diameter, solitary and senile or nearly so, appearing from the lateral buds of last year's growth or on short fruit spurs. Bark reddish. Fruit yellow, nearly glabrous when ripe, varying in size; the stone nearly or quite free, flattened, smooth, and grooved or ridged on one edge. Native to China.

*Prunus virginiana* L. Choke Cherry.

Leaves thin, obovate, or broadly oval, abruptly acute or acuminate at the apex, rounded at the base, serrulate, with slender teeth. Flowers 1-3 to  $\frac{1}{2}$  inch broad, in mainly loosely-flowered racemes, terminating leafy branches of the season. Fruit purple or black, 1-3 inch in diameter, very astringent. This is the common wild cherry growing along streams or in rocky situations which makes the lips pucker. Native to Nebraska.

*Prunus cerasus* L. Sour Cherry.

Leaves ovate or ovate-lanceolate, variously dentate, abruptly acute or acuminate, rounded at the base, very resinous when young. Flowers white,  $\frac{3}{4}$  to 1 inch broad, in sessile, lateral, very scaly umbels, expanding with the leaves or before them. Fruit globose, 8 to 10 mm. in diameter (larger in cultivation), black or red, sour, without bloom. Bark light brownish-red to dark brown, marked by parallel lenticels, bitter tasting. The cultivated form of this tree is our common sour cherry. Native to Europe.

*Prunus padus* L. European Bird Cherry.

Resembles *Prunus virginiana*, but has larger flowers on larger pedicels, in longer and looser, often drooping, somewhat leafy racemes. Stone of the fruit rough. This makes a very pretty little tree for ornamental planting. Native to Europe and Asia.

*Prunus besseyi* Bailey. Western Sand Cherry.

Leaves elliptic, oblong, or oval, the teeth appressed, the apex and base mostly acute. Flowers in sessile umbels, expanding with the leaves, 8 to 10 mm. broad. Fruit black, mottled, or yellowish, 12 to 16 mm. in diameter, on stout pedicels, bitterish and astringent. This is a small shrub, with spreading or prostrate branches. It grows naturally in the western part of the state, however, and may possibly by cultivation be developed into a commercial species.

*Prunus serotina* Ehrhart. Wild Black Cherry.

Leaves oval, oblong to lanceolate-oblong, gradually or sometimes abruptly acuminate or rarely rounded at the apex, wedge-shaped or occasionally rounded at the base, finely serrate, dark green and very lustrous above, paler below, 2 to 5 inches long, 1 to  $1\frac{1}{2}$  inches wide. Flowers  $\frac{1}{4}$  inch in diameter on slender pedicels, in erect or ultimately-spreading, many-flowered racemes, 4 to 6 inches long. Fruit 1-3 to  $\frac{1}{2}$  inch in diameter, almost black when ripe. Both fruit and bark are bitter almond-flavored. Bark dark, almost black. Foliage not luxuriant. By itself, this tree is not a beautiful one. It does, however, form a rather pleasant contrast when planted with other trees. Native to eastern Nebraska.

*Prunus persica* Sieb. and Zucc. Peach.

Leaves broad-lanceolate or oblong-lanceolate, coarsely serrate, light pea green, 4 to 6 inches long. Young twigs light pea green in color. Older bark greenish-yellow. Branchlets drooping. Flowers solitary, pink, appearing before the leaves, 1 inch in diameter. Fruit soft, pubescent at maturity, grooved, the stone deep-pitted and very hard. This is our common peach. Native to China.

## FAMILY CAESALPINIACEAE. HONEY LOCUST FAMILY.

*Cercis canadensis* L. Red-bud.

Leaves almost perfectly heart-shaped, entire, glabrous, with the exception of axillary tufts of white hairs, or sometimes more or less pubescent below, 3 to 5 inches long and broad. Flowers  $\frac{1}{4}$  inch long,

on pedicels 1-3 to  $\frac{1}{2}$  inch in length, and in clusters of four to eight. Bark dark red-brown, separating into thin scales. This is a small tree, averaging only about 25 feet in height. It is a very ornamental tree for lawn planting, because from the months of March to May it is simply a mass of pale crimson flowers, which appear before the leaves are out. Native to eastern Nebraska. One of these trees may be seen at the corner of Sixteenth and R streets.

*Gleditsia triacanthos* L. Honey Locust.

Leaves compound, 7 to 8 inches long, with pubescent petioles. Leaflets 18 to 28, lanceolate-oblong, unequal at the base, acute or slightly rounded at the apex, remotely crenulate-serrate, dark green and lustrous above, dull yellow-green below, 1 to  $1\frac{1}{2}$  inches long,  $\frac{1}{2}$  inch wide. Petioles short, stout, and pubescent. Bark reddish and roughened on the surface by small, persistent scales. Branches spreading, somewhat pendulous, often bending at a very decided angle, usually armed with stout, rigid, long-pointed, simple, or 3-forked spines. This is an all-around good tree. It makes a good lawn or street tree. It is very hardy and can be successfully planted in western Nebraska. Not subject to insect attacks like its near relative, the black locust. Native to eastern Nebraska.

*Gymnocladus dioica* (L.) Koch. Kentucky Coffee-tree.

Leaves doubly-compound, 1 to 3 feet long, 5 to 9 pinnate, the pinnae 6 to 14 foliolate, petioles abruptly and conspicuously enlarged at the base. Leaflets ovate, acute, often with a small, abrupt tip, especially when young, wedge-shaped or irregularly rounded at the base, dark green above and pale yellow-green below, 2 to  $2\frac{1}{2}$  inches long, and 1 inch wide. Bark dark grey, tinged with red and roughened by small, persistent scales. Branchlets club-shaped and marked by orange-colored lenticels. Fruit a pod, 6 to 10 inches long,  $1\frac{1}{2}$  to 2 inches wide, dark red-brown. Seed  $\frac{1}{4}$  inch in diameter. In the south the seed were once used as a substitute for coffee. Native to eastern Nebraska.

FAMILY PAPILIONACEAE. BEAN FAMILY.

*Sophora japonica* L. Japan Pagoda Tree.

Leaves compound, 7 to 9 inches long. Leaflets 5 to 13, distinctly stalked, ovate to ovate-lanceolate, acute, rounded at the base, dark green and glossy above, more or less pubescent beneath, 1 to 2 inches long. Bark of trunk dark gray, ridged. Branches dark green, remaining so in winter. Fruit a narrow, moniliform pod which is distinctly stalked. Forms a dense, round head with spreading branches. Its flowers and fruits yield a yellow dye. Resembles the black locust in appearance, but is not armed with small thorns. This tree grows well in rather dry soil. A specimen may be seen on Ninth street between H and J. Native to China.

*Robinia pseudacacia* L. Black Locust.

Leaves compound, 8 to 14 inches long, with slender puberulous petioles

and 7 to 9 leaflets. Leaflets oval, rounded or slightly truncate and minutely apiculate at the apex, very thin, dull, dark blue-green above, pale below, glabrous with the exception of the slight pubescence on the under side of the slender midribs,  $1\frac{1}{2}$  to 2 inches long,  $\frac{1}{2}$  to  $\frac{3}{4}$  inch wide, their petioles stout,  $\frac{1}{8}$  to  $\frac{1}{4}$  inch long. Stipules becoming straight or slightly recurved spines, persistent for many years and ultimately often 1 inch in length. Bark deeply furrowed, dark grey, tinged with red. Branchlets slender, round or sometimes many angled. Fruit a pod, 3 to 4 inches long and  $\frac{1}{2}$  inch wide. Seed 3-16 inch long. Were it not that this tree is subject to attack by bark-boring beetles, it would be one of the best trees we have. It is extremely hardy and will grow in the western part of the state. Not native to Nebraska.

FAMILY HAMAMELIDACEAE. WITCH HAZEL FAMILY.

*Liquidambar styraciflua* L. Sweet Gum.

Leaves deeply 5 to 7 lobed, star-shaped, 4 to 7 inches long and broad, finely toothed, with large tufts of pale hairs in the axils of the principal veins beneath, exhaling when bruised a pleasant, resinous fragrance. This tree is often planted in the east for ornamental purposes because of the beautiful crimson color of the foliage in the autumn. Not native to Nebraska and will probably not do well here. A small specimen may be seen at the State Farm.

FAMILY PLATANACEAE. PLANE-TREE FAMILY.

*Platanus occidentalis* L. Sycamore.

Leaves broadly ovate, more or less 3 to 5 lobed by broad, shallow sinuses, rounded at the bottom, resembling very much the leaves of the grape, pale pubescence along the midribs and principal veins below, 4 to 7 inches long and broad or twice as large on vigorous shoots. Outer bark light gray, peeling off in thin plates and exposing the inner bark, which is light green in color. In favorable localities this tree grows to be the largest of any of the trees east of the Rocky mountains. Native to eastern Nebraska and is quite largely planted in this portion of the state as an ornamental tree.

FAMILY CELASTRACEAE. BITTERSWEET FAMILY.

*Evonymus atropurpureus* Jacquin. Burning Bush. Wahoo.

Leaves elliptical-ovate, acuminate, minutely serrate or biserrate, membranaceous, puberulous below, 2 to 5 inches long, 1 to 2 inches broad. Petioles stout,  $\frac{1}{2}$  to 1 inch long. Twigs obtusely 4-angled. Bark thin, ashy-grey and covered by thin, minute scales. Fruit a deeply 3 to 4-lobed pod,  $\frac{1}{2}$  inch across, orange-red in color, and usually persistent on the branches until midwinter. Usually a shrub, sometimes a small tree, which is largely planted for ornamental purposes. Native to eastern Nebraska.

## FAMIL ELAEAGNACEAE. OLEASTER FAMILY.

*Elaeagnus angustifolia* L. Russian Olive.

Leaves lanceolate or oblong-lanceolate, quite entire, light green above and pubescent when young, silvery-white and scaly beneath, 2 to 3 inches long. Fruit a drupe, oval, silvery-white, about 1-3 inch long. Bark of trunk a deep red, dividing into thin, scaly strips. Young branches slender, reddish-brown in color. Because of the beauty of its foliage, this tree is being planted quite extensively for ornamental purposes. Prefers sunny situations and is quite hardy. It has been planted to some extent in the western part of the state. Native to Europe and Asia.

## FAMILY ACERACEAE. MAPLE FAMILY.

*Acer saccharinum* L. Silver Maple.

Leaves truncate or somewhat heart-shaped at the base, deeply 5-lobed by narrow sinuses, with acute, irregularly and remotely-dentate lobes, the middle lobe often 3-lobed, 6 to 7 inches long, nearly as broad, membranaceous, bright, pale green above, silvery-white and at first slightly hairy below, especially in the axils of the primary veins, their petioles slender, drooping, bright red, 4 to 5 inches long. Fruit on slender, drooping, glabrous pedicels,  $1\frac{1}{2}$  to 2 inches long,  $1\frac{1}{2}$  to 3 inches broad, with thin, almost straight, conspicuously falcate, divergent wings, sometimes  $\frac{3}{4}$  inch broad. Branchlets pendulous. Bark of young stems and large branches smooth and gray, faintly tinged with red, becoming on old trunks reddish-brown and more or less furrowed, the surface separating into large, thin scales. A good, rapid-growing and ornamental tree for lawn and street planting. Native to eastern Nebraska.

*Acer saccharum* Marsh. Sugar Maple.

Leaves heart-shaped, truncate or sometimes wedge-shaped at the base, 3 to 5-lobed with rounded sinuses, usually acute, sparingly sinuate-toothed lobes, pubescent below when first opened, glabrous at maturity, 4 to 5 inches long and broad, dark green and opaque on the upper, pale on the lower surface. Petioles slender, glabrous,  $1\frac{1}{2}$  to 3 inches long. Fruit ripening in the autumn, glabrous, with broad, thin wings which diverge less than those of silver maple,  $\frac{1}{2}$  to 1 inch long. Bark of young branches smooth or slightly fissured, light gray, becoming on large trunks thick and broken into deep, longitudinal furrows, the light, gray-brown surface separating into small scales. This is the tree from the sap of which we make our maple sugar. It takes on a beautiful, symmetrical form, making it one of the most ornamental trees we have. Not native to Nebraska nor does it grow very well here.

*Acer platanoides* L. Norway Maple.

Leaves heart-shaped, 4 to 7 inches long and broad, thin, glabrous, dark green, 5-lobed, each lobe set with 2 to 5 coarse and taper-pointed teeth. Fruit flat, smooth, with wings 2 inches long, diverging in a

straight line. If the petiole of a leaf is squeezed a milky sap exudes. This tree resembles very much the sugar maple in general appearance. Trees which have been planted here are growing well. Native to Europe.

*Acer negundo* L. Box Elder.

Leaves compound, with slender petioles 2 to 3 inches long, which are enlarged at the base and often furnished with a minute fringe of deciduous white hairs, and in falling leave large conspicuous scars surrounding the stem. Leaflets ovate or oval, acute, rounded, or wedge-shaped at the base, coarsely and irregularly serrate above the middle or sometimes 3-lobed, 2 to 4 inches long, 2 to 3 inches broad, bright green in color, on stout petiolules. Fruit pendent on stems 1 to 2 inches long, in graceful racemes 6 to 8 inches long, persistent on the branches until the following spring,  $1\frac{1}{2}$  to 2 inches long, with thin, reticulate, straight or falcate wings diverging at a very acute angle. Twigs of last year's growth remaining green in color throughout the winter. Winter buds white, tomentose. This makes a pretty, rapid-growing shade tree. It is very hardy and does well in some portions of the western part of the state. Native to Nebraska.

#### FAMILY HIPPOCASTANACEAE. HORSE CHESTNUT FAMILY.

*Aesculus hippocastanum* L. Horse Chestnut.

Leaves compound, long petioled, opposite, hand-shaped. Leaflets 5 to 7, strongly-veined, sessile, obovate, 5 to 10 inches long, abruptly pointed at the apex, irregularly crenulate-dentate. Flowers in terminal panicles, forming a dense inflorescence, often 1 foot long, white, mottled with yellow and purple. Winter buds large, very resinous. Fruit has a thickish husk with strong prickles and a large chestnut-colored, inedible nut, of a peculiar, strong, but aromatic odor. This tree does not get very large, but it forms a broad, very symmetrical head, which makes it especially adapted for an ornamental shade tree. It is a native of Asia.

#### FAMILY ANACARDIACEAE. SUMAC FAMILY.

*Rhus copallina* L. Dwarf, Black or Mountain Sumac.

Leaves compound, 6 to 8 inches long, with slender, pubescent petioles and rachises more or less broadly wing-margined between the leaflets, the wings increasing in width toward the apex of the leaf. Leaflets 9 to 21, oblong or ovate-lanceolate, entire or remotely serrate above the middle, sharp-pointed at the apex, often unequal at the base, the lower pair short-petiolulate and smaller than those above the middle of the leaf, the others sessile with the exception of the terminal leaflet, at maturity dark green and lustrous above, pale and pubescent below,  $1\frac{1}{2}$  to  $2\frac{1}{2}$  inches long,  $\frac{3}{4}$  inch wide. Branchlets very pithy. A small tree, which is native to eastern Nebraska. A small specimen may be seen at the State Farm.

*Rhus typhina* L. Staghorn Sumac.

Leaves compound, 16 to 24 inches long, with stout petioles, red on the

upper side and densely velvety-hairy, enlarged at the base and surrounding and enclosing the buds developed in their axils. Leaflets 11 to 31, oblong, often scythe-shaped, rather remotely and sharply serrate, long-pointed, nearly sessile, rounded or slightly heart-shaped at the base, at maturity dark green on the upper surface, pale or often nearly white on the lower surface, glabrous with the exception of the short, fine hairs on the under side of the stout midribs, 2 to 5 inches long, 1 to 1½ inches wide, turning bright scarlet color in the autumn. Sap milky, turning black on exposure. Branchlets thick, densely velvety-hairy, and very pithy. The beautiful coloring of the foliage of this tree in the autumn makes it a really ornamental species at this time of the year. Native to eastern United States.

*Rhus glabra* L. Smooth, Upland or Scarlet Sumac.

Leaves compound, 16 to 24 inches long, the petiole and rachis glabrous. Leaflets 11 to 31, lanceolate or oblong-lanceolate, 2 to 5 inches long, acuminate, rounded and often oblique at the base, dark green above, whitish beneath, sharply serrate. Drupe covered with short, reddish, acid hairs. Branchlets thick, club-shaped, glabrous and somewhat glaucous, covered rather thickly with buds which are white, hoary-tomentose. Milky sap exudes when the branchlet is cut. Leaf scars heart shaped. This sumac grows very commonly around here. Its fruit has a characteristic, sour, acid taste. Native to Nebraska.

*Rhus cotinoides* Nuttall. Wild or American Smoke-tree.

Leaves oval or slightly obovate, thin, glabrous, or sparingly pubescent beneath, 3 to 7 inches long, 1½ to 2½ inches wide, obtuse at the apex, the blade slightly decurrent on the petiole, entire. Flowers green, about ½ inch broad, in large, terminal panicles. Usually most of the flowers are abortive, while their pedicels lengthen, branch, and bear long, plumy hairs, making large, light, and feathery or cloud-like bunches, either greenish-gray or ruddy tinged. Drupe 4 mm. long, oval, compressed, enlarged on one side, 1-seeded. A small, widely-branched tree, native to the southeastern part of the United States.

#### FAMILY JUGLANDACEAE. WALNUT FAMILY.

*Juglans nigra* L. Black Walnut.

Leaves compound, 1 to 2 feet long, with hairy petioles. Leaflets 15 to 23 in number, ovate lance-shaped, 3 to 3½ inches long, 1 to 1½ inches wide, often unequal at the base, long-pointed, sharply toothed except at the base, lustrous and smooth above, soft-hairy below, especially along the midribs. Twigs of last year's growth covered with rusty, matted hairs. Leaf scars heart-shaped. Bark deep, rich-brown color. Pith composed of pitted vessels. Native to eastern Nebraska. One of our largest and most valuable trees. Because of its high value, the tree is rapidly disappearing.

*Juglans sieboldiana* Maxim. Walnut.

Leaves compound. Leaflets 11 to 17, oval to oval-oblong, pointed,



densely toothed, smooth above, pubescent beneath, 3 to 6 inches long. Fruits in long racemes, sometimes twenty, globose to ovate-oblong; nut more or less globose, with thick, wing-like sutures and pointed apex. The surface rather smooth, somewhat wrinkled and pitted, 1 to 1½ inches long. Branches sturdy and stout-looking, resembling those of the *Allanthus*. Pith composed of pitted chambers. Native to Japan. A small tree may be seen at the State Farm. This tree is not hardy in Nebraska, as it kills back each winter.

*Hicoria minima* Britton. Bitternut Hickory.

Leaves compound, 6 to 10 inches long, with slender, hairy petioles. Leaflets 5 to 9, lance-shaped to oblong or ovate lance-shaped, long-pointed, sessile, coarsely toothed except at the equally or unequally wedge-shaped base, pubescent below, especially along the midribs, 4 to 6 inches long, ¾ to 1¼ inches wide. Fruit ¾ to 1½ inches long, 4-winged from the apex to about the middle, with a thin husk more or less thickly coated with a yellow, scarfy pubescence. Kernel of nut very bitter. Winter buds sulphur colored. A fine, erect, slender tree. Native to eastern Nebraska.

#### FAMILY BETULACEAE. BIRCH FAMILY.

*Betula populifolia* Marsh. White Birch.

Leaves nearly triangular, long-pointed, coarsely double-toothed with stout, spreading teeth, except at the broad wedge-shaped or slightly heart-shaped base, 2½ to 3 inches long, 1½ to 2½ inches wide, stout, yellow midribs. Petioles slender, circular, often stained with red on the upper side. Bark dull, chalky white on the outer surface and bright orange on the inner, becoming at the base of old trees nearly black. Bark of branchlets bright yellow and lustrous in the summer, becoming bright reddish-brown during the first winter. The tree forms a narrow, pyramidal head and makes a very desirable ornamental tree. Not native to Nebraska.

*Betula lutea* Michaux. Yellow Birch.

Leaves ovate to oblong-ovate shaped, pointed at the apex, gradually narrowed to the rounded wedge-shaped or rarely heart-shaped base, sharply doubly-toothed, 3 to 4½ inches long, 1½ to 2 inches wide, with stout midribs and primary veins covered below near the base of the leaf with short, pale hairs. Bark of the young stems and of the branches bright silvery-gray or light orange color, very lustrous, separating into thin, loose, persistent scales, more or less rolled on the margins, becoming on old trees ½ inch thick, reddish-brown in color. The tree forms a broad, round-topped head with slender, more or less drooping branches. A good tree for ornamental purposes in Nebraska. Not native to this state.

#### FAMILY FAGACEAE. OAK FAMILY.

*Fagus sylvatica* L. var. *purpurea* Ait. Copper Beech.

Leaves ovate or elliptic, remotely finely-toothed, silky beneath when young, 2 to 4 inches long, copper colored. Bark light gray in color. All

beech are among the most ornamental and beautiful of trees for park planting, and because of the color of the foliage of this one it is especially so. This tree is a variety of the European Beech. The only trees of this kind of which we know are two which are growing on the Lincoln Court House grounds. Owing to rough treatment which they have received they are still very small.

*Quercus palustris* Muench. Pin Oak.

Leaves inversely ovate shaped, divided by wide sinuses, rounded at the bottom into 5 to 7 lobes, which are 3 to 4-toothed and bristle tipped, 4 to 6 inches long, 2 to 4 inches wide, with large tufts of pale hairs in the axils of the primary veins below. Acorn inclosed only at the base in a thin, saucer-shaped cup, dark red-brown and lustrous within, and covered by closely-appressed, ovate, light red-brown, thin, minutely-pubescent scales. Branchlets beset with short, pin-like spurs. A very desirable tree for ornamental purposes because of the deep, rich-red color of the leaves in autumn. Not native to Nebraska, but does well here in moist situations.

*Quercus coccinea* Moench. Scarlet Oak.

Leaves oblong-inversely-ovate or oval, divided by wide sinuses, rounded at the bottom into 7, rarely 9, lobes, which are 3 to 5-toothed and bristle-tipped, 3 to 6 inches long,  $2\frac{1}{2}$  to 4 inches broad, sometimes with small tufts of rusty pubescence in the axils of the veins below. Fruit solitary or in pairs,  $\frac{1}{2}$  to 1 inch long, 1-3 to 2-3 inch broad, inclosed for 1-3 to  $\frac{1}{2}$  of its length in a cup which is light reddish-brown on the inner surface, with the scales slightly hairy. Forms a narrow, open head, and is planted in many places as an ornamental tree because of the brilliant autumn color of the foliage. Native to southeastern Nebraska.

*Quercus rubra* L. Red Oak.

Leaves oblong or inversely-ovate, wedge-shaped at the base, usually divided about half way to the midribs by wide sinuses into 11 or sometimes 7 to 9 lobes, which are 3 to 7-toothed and bristle-tipped, 5 to 9 inches long, 4 to 6 inches broad, and sometimes furnished with small tufts of rusty hairs in the axils of the veins beneath. Fruit solitary or in pairs; acorn ovate or oval, with a broad base, gradually narrowed and rounded at the apex,  $\frac{3}{4}$  to  $1\frac{1}{4}$  inches long,  $\frac{1}{2}$  to 1 inch wide, usually inclosed only at the base in a thick, shallow, saucer-shaped cup, reddish-brown and minutely hairy within. This tree, besides being highly ornamental because of the highly-colored autumn foliage, produces wood which is very beautiful in inside finishing. Native to Nebraska.

*Quercus pedunculata* Ehrhart. English Oak.

Leaves oblong-obovate, short-petioled, with 3 to 7 rounded lobes on each side, dark green above, pale bluish-green beneath,  $2\frac{1}{2}$  to 5 inches long. Fruit 1 to 7 in a bunch on long, slender stalks; acorn ovate or ovate-oblong, about 1 inch long, embraced about one-third of its length by the hemispherical cup. This tree's branches are rather stout and spreading and form a round-topped head. This is the European oak of

commerce, but is not nearly so good a tree as many of our oaks. It seems to grow well in this portion of Nebraska. A small specimen may be seen on the University campus.

*Quercus macrocarpa* Michaux. Bur Oak.

Leaves obovate or oblong, wedge-shaped or occasionally narrow and rounded at the base, divided by wide sinuses rounded at the bottom, sometimes penetrating nearly to the midrib into 5 to 7 lobes, the terminal lobe large, oval or obovate and regularly scalloped or smaller and 3-lobed at the rounded apex, covered on the lower surface with soft, pale pubescence, 6 to 12 inches long, 5 to 6 inches wide. Fruit usually solitary, varying in size and shape; acorn half to three-fourths covered by a deep cup which is bordered by a conspicuous matted or mossy fringe. Branchlets covered for first three or four years with corky wings. A tree which reaches massive proportions and which is very rugged in appearance, especially in the winter time. Our strongest and most durable oak. Native to the eastern half of Nebraska.

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**A METHOD OF IMPROVING DILAPIDATED  
STRUCTURES.**

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**BY ERWIN H. BARBOUR.**

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## A METHOD OF IMPROVING DILAPIDATED STRUCTURES.

BY ERWIN H. BARBOUR.

The poor man soon makes a start in Nebraska, as is plainly evidenced by the way he and his family progress from the cabin to a comfortable cottage, then to a house so spacious and well appointed as to be deemed a mansion in many countries.

In making a start many a man is compelled, despite his better taste, to put up for a time with humble if not squalid quarters. In our towns and on farms, men are to be found living in places with chimneys down, siding off, roofs leaking and house otherwise unfit for human habitation. Such places are unsanitary and the fitness of things is so poorly observed that men cannot live there and preserve their self-respect long. It is the purpose of this paper to describe a method of finishing dilapidated structures in a cheap and substantial manner rendering them sightly and serviceable.



FIG. 1.—An abandoned house.

Failing to find a neglected or abandoned house at reasonable cost on which to experiment, the writer seized the opportunity to improve the old farm house on the Saeger tract bought by the city of Lincoln for park purposes.

A better example of dilapidation and neglect could not have been found. The house was an old one and apparently had never been painted. The weather boards had buckled and curled until they had drawn the nailheads through the lumber. As a result all siding was loose and shaky, and many of the boards wanting altogether. (See Fig. 1.)

The city park board was strongly inclined to sell the house and have it removed from the city park. It was past repair, for the cost would have been greater than the house was worth. It is doubtful if it could

have been sold for \$50. In behalf of the committee on grounds, the writer undertook to reconstruct and repair the house by using hydraulic cement. Since the experiment seems to have been entirely satisfactory, the writer wishes to present the facts to the farmers of Nebraska, believing that they will find them suggestive and helpful.

In order to imitate the work done by an average farmer or other amateur worker in cement, the head gardener of the Lincoln park system undertook, without experience, to reconstruct this old house. The curled and rickety weather boarding was nailed securely to the studding, regardless of breaks and cracks, knot holes, missing boards, misfit lumber and rotten spots. Blemishes amount to nothing when they are to be covered over with that plastic rock called Hydraulic Cement.

Wire lath was next nailed over the house. The metal lath comes in strips about eighteen inches wide and nine feet long. This is put on by nailing into the studding and bending the nails over and pounding down. Nails are better than staples, which are sometimes used, and the metal lath can be put on much more rapidly and rigidly. As soon as it was properly lathed the first coat of cement was trowelled on with a firm hand so as to make good keys, and at the same time completely fill cracks and loose joints with cement. It matters not how rough this coat is, in fact it ought to be scratched as shown in figure 3 to prepare it the better for the succeeding coat. This first coat is known as the scratch coat. The "scratcher" for this work was made by driving a few wire nails through a small wooden block, although a rough stick or a trowel will do. With this the cement was quickly and effectively scratched before it had set. The formula which we used in mixing the scratch coat is as follows: One part of cement, three parts of sand. Notice this is probably too rich in cement. One part of cement to four or five parts of sand would do as well.

In carrying out this experiment, let it be remembered we worked as untrained amateurs, not as professionals. Accordingly, the best mixtures were probably not made and the best results were not obtained, but nevertheless they were highly satisfactory and worth reporting. Manufacturers of cement recommend five measures of cement, twelve measures of sand, three measures of lime and a small quantity of hair, but they state that some masons prefer the former mixture. It is simple, and the less complex the better it is for the amateur.

In mixing use a platform of clean boards or the barn floor or a large box. Put the sand and cement together dry and turn repeatedly with a shovel to completely mix, make a hollow place in the pile, pour in water and turn over repeatedly with the shovel until an even mortar is made that will spread nicely under the trowel.

This is a very easy, simple process, requiring no previous experience, and the amateur may feel entire confidence in the results if a reasonably good cement is used. Let it be interposed here that the price of American cement has gone down while the quality has gone up. One

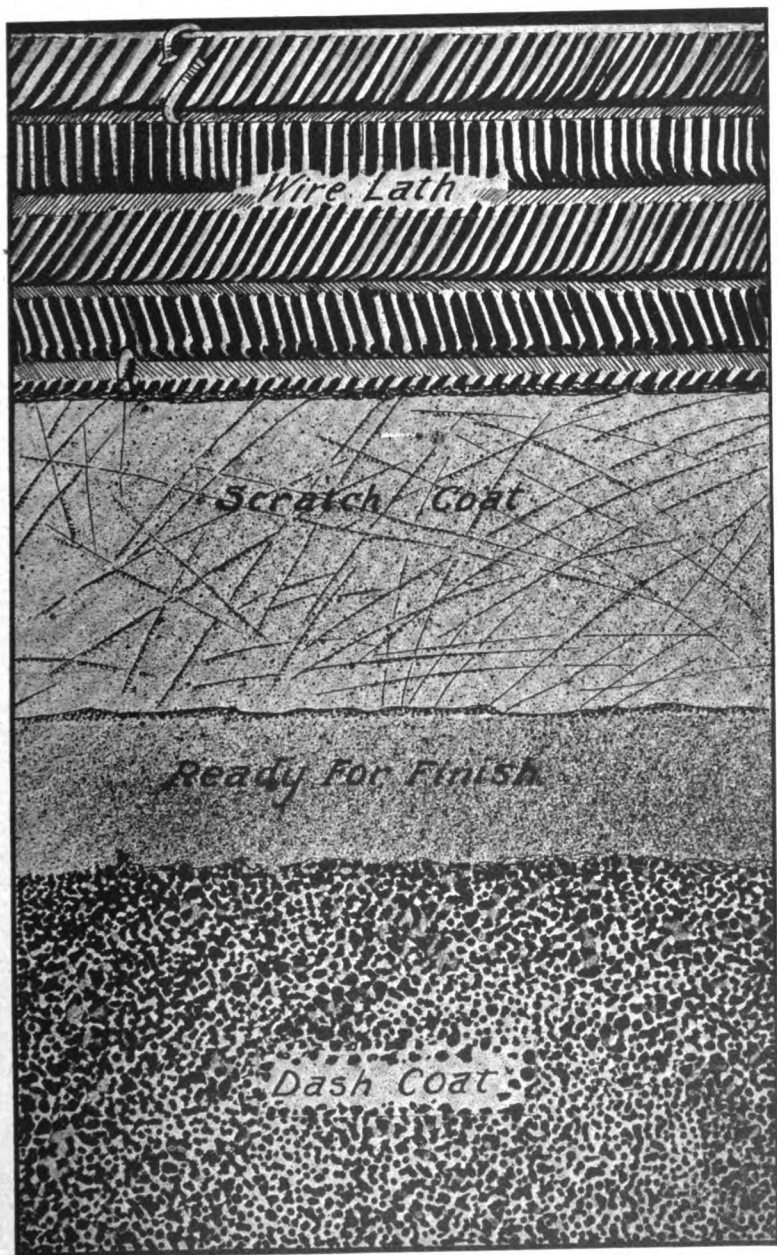


FIG. 3.



can depend on the brand of cement which any honest local dealer may recommend to him.

Trowel on the second coat as soon as possible, making it a little richer in cement than the scratch coat. Use one measure of cement to two or three of sand. By all means avoid trying to make this coat "nice and smooth." Let it be rough and irregular, for the worse it is the better. In fact, to make it rough and imitative of natural stone, a third, or dash coat, is put on by throwing or dashing on cement by means of a whisk broom or bunch of twigs. In this way the wall is spattered over with irregular lumps of cement which give a fine effect, and completely conceal any roughness in trowelling. This is a quicker and far more artistic way than to attempt to smooth the work, or to line it off in imitation of masonry. This rough effect is often obtained by rubbing the walls with a coarse coffee sack while the cement is still



FIG. 2.—The same house as shown in Fig. 1, after being coated with cement.

green. Boston ivy, or the common wild Virginia creeper of the woods cling to such walls and give a good effect.

The coat of cement put on thus is about three-fourths to one inch thick and becomes as hard and enduring as stone.

It is impervious alike to wind and rain, besides being a first class fire-proof covering.

Take notice that this house which would not have sold for \$100 was converted into a good looking house for the sum of \$173.00. Such a house could not be built anew for \$1,500. The house has a good cement cellar, a large cement porch with floor and roof of cement, three large rooms downstairs and two upstairs. The items more in detail are as follows:

Cost of material for coating house, including wire lath, sand, and cement, \$82. Cost of material for the large porch, \$45, including a solid cement floor one foot thick. Cost of all material for cellar including outside entrance and steps, cement floor, and thick cast walls, \$46. Total cost of repairing house, \$173. Notice this does not include cost of labor, for the work was done by self help, much as it would be done on the ranch, farm, or village home.

Those interested in this experiment will see that at small cost a worthless house was rendered sightly, tenable, and desirable; that it has the appearance and qualities of a stone house. It is occupied by the head gardener of the Lincoln Park system. We would suggest that farmers and their sons try the experiment of redeeming old sheds, out-houses, and barns in this way. If they will report their results to the State Geologist it will enable him to prepare and publish reports for the benefit and instruction of others.

We would invite those interested to visit the city park when in Lincoln and inspect this house for themselves.

ERWIN H. BARBOUR.

Nebraska Geological Survey, the University of Nebraska, March, 1907.



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**REPORT OF THE ZOOLOGIST.**

**HENRY B. WARD.**

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**ON THE BIOLOGIES OF THE RHYNCHOPHORA OF  
NORTH AMERICA.**

**W. DWIGHT PIERCE.**

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## REPORT OF THE ZOOLOGIST.

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In the place of submitting myself a report for publication this year in the annual volume of the State Board of Agriculture, it has seemed to me appropriate to print a thesis for an advanced degree which was offered by one of the students in this department last year. Mr. Pierce has devoted a long time to the study of the biology, life histories, and activities of the group of weevils which are so numerous in every situation and so destructive to all varieties of plant life. The primary element in meeting their ravages is to secure knowledge of what particular form is at work and in what manner it carries out its devastations, what parts of the food plant are attacked and where the different phases of its life cycle are passed.

Up to the present time there is available no outline which has brought together the work of these animals in complete form, and Mr. Pierce, in making this extensive summary and in incorporating his own valuable researches covering many years of study, has placed at the disposal of the Nebraska people a most valuable summary of the knowledge in this field.

The index to plants will enable the botanist readily to refer to those forms most likely to occur on any given plant, and this, with the other indices, will facilitate reference to the very extensive data contained in the paper.

HENRY B. WARD.

Zoological Laboratory, The University of Nebraska.



## ON THE BIOLOGIES OF THE RHYNCHOPHORA OF NORTH AMERICA.

W. DWIGHT PIERCE.

In connection with the writer's study of the cotton-boll weevil problem from the parasite standpoint, there has arisen a definite demand for a comprehensive classification of the present knowledge of weevil biologies. One of the first lines of study necessary in taking up the parasite problem, was to know the extent to which the closely related species in the genus *Anthonomus* were parasitized. Numerous specimens had been collected in the previous years of the investigation, but the breeding habits of very few of the *Anthonomi* were known, and a search of the literature gave but little additional information. It was therefore distinctly necessary in order to settle a point which might have little or great potentiality, that the weevils should be sought out and studied. Weevils are found everywhere, breeding sometimes under most astonishing conditions, and the investigator must be armed with sharp knives and trowels, and must cut open the buds, flowers, fruit, seed, stems, and roots and the insect galls of every species of plant he encounters at various seasons in order to insure himself that he has to any extent worked out the biologies of the weevils in his neighborhood.

The economic value of this apparently indiscriminate and technical biological work was evident from the very start. Of the six species of weevils which were definitely bred during 1905 all were proven to be the hosts of parasites which were important enemies of the boll weevil. During the year 1906 the writer has been able to demonstrate clearly that all of the parasites of the boll weevil, with the exception of two new species, one from southernmost Texas, the other from Guatemala, and a little known species of doubtful habit from Mexico, are definitely and commonly primary parasites of native weevils which breed frequently in the immediate vicinity of the cotton fields. The most striking fact ascertained was that parasitism occurred upon the first generation of weevils in a newly infested country, at Minden, Louisiana. It is not conceivable that the delicate parasites could have sustained a flight equal to that of the weevils, hence the parasites are supposed to be native. The writer is thoroughly convinced that the parasites can alter their habits in order to attack a new host and also that there is no necessity of scouring foreign countries for parasites and enemies of doubtful value, and risking the introduction of injurious species, as far as the boll weevil problem is concerned.

The other elements of weevil control, which are in fact in most cases more efficient than the parasites, do not enter into the present discussion, because they show no connection with the general relationships of weevil biologies.



It is with the view of obtaining a broader knowledge of the biological relationships of important economic species that the writer has compiled the following rather extensive list of the breeding habits of American weevils, using the available, reliable literature, and adding much new material gained in his research upon the subject. Although many important works on the breeding habits of European Rhynchophora have been consulted, no reference to European species can be made in this paper on account of its brevity. A most noteworthy result of this compilation has been to show that in many cases writers have had their specimens wrongly determined, as is evidenced by contradictory statements concerning breeding habits. No note of such cases has been indicated in the text, because future research must settle these problems. Too frequently, species of very great similarity, but diverse habits, have been confused by conservative authors of great repute. Nothing but the breeding of both species and the description and differentiation of these in all stages can clear and settle such confusion. The records are therefore given at their face value. The determination of weevils collected by the various members of the Cotton-Boll Weevil Investigation have been made by Mr. E. A. Schwarz, the recognized American authority on Coleoptera. The determinations of weevils bred during 1906 have been made by the writer and compared with the determined collections in the United States National Museum. Dipterous parasites cited in the original records have been determined by Mr. D. W. Coquillett. The Hymenopterous parasites newly cited are determined mainly by Mr. J. C. Crawford, of the United States National Museum. It is through the courtesy of the officials of the Bureau of Entomology, Dr. L. O. Howard, and Mr. W. D. Hunter, that the writer is privileged to present in this form partial results of two years' study upon the Rhynchophora. The summary of the habits of the Scolytidae have been included in order to present the suborder in its entirety and with no intention of encroaching upon the researches of Dr. A. D. Hopkins, whose works are mainly quoted. The botanical references in published works are given as originally recorded in most cases without attempting to follow the rapidly-changing nomenclature. The flower records given in the original citations have in most cases been corroborated by the officials of the Division of Botany.

The present paper is offered as a thesis for the degree of master of arts, and the writer wishes hereby to acknowledge the courtesy of the faculty of the University of Nebraska, and especially Dr. H. B. Ward, in accepting it for publication.

It is hoped that the first part of this thesis, which is arranged according to the present classification, will serve the purpose for which it was prepared; namely, as a guide to the existing knowledge of the group. It will at least indicate those families, tribes, and groups in which our present knowledge is deficient.

The second part, though brief, presents a new line of study, which is becoming imperative in the light of the application of systematic entomology to economic investigations. Had time permitted, the writer might

have presented studies of the immature characters of many more species. As it is, the paper gives the extent of known information concerning the characters of the pupae of the genus *Anthonomus*, including four economic species, *A. grandis*, *A. nigrinus*, *A. aeneotinctus*, and *A. quadrigibbus*, and demonstrating that the existing classification is somewhat faulty.

# THE BREEDING HABITS OF THE RHYNCHOPHORA.

## FAMILY I. RHINOMACERIDAE.

The adults depredate the male flowers of coniferous trees, in which the eggs are deposited (Le Conte and Horn 1876).

8197. *Rhinomacer elongatus* Lec. Beaten from plum and peach (Scott and Fiske 1902:33).

## FAMILY II. RHYNCHITIDAE.

### Subfamily I. Rhynchitinae.

The adults are found on flowers, breed in buds and fruit.

8204. *Auletes cassandrae* Lec. Collected on *Cassandra calyculata* (Le Conte and Horn 1876:5).

8205. *Eugnaptus striatus* Lec. On walnut and hickory trees (Hamilton 1895).

8206. *Eu. angustatus* Cyll. Plentiful on foliage of hickory and butternut trees (Beutenmüller 1890). On walnut trees (Hamilton 1895). On hazel in Nebraska (Bruner).

8207. *Eu. collaris* Cyll. Plentiful on foliage of hickory and butternut trees (Beutenmüller 1890).

8210. *Rhynchites bicolor* Herbst. Abundant on wild roses (Le Conte and Horn 1876:7). The adult punctures the buds of roses and oviposits in the fruit in which the young mature. It also feeds on ripe blackberries and raspberries in California (Chittenden 1901a:98-100).

8211. *Rh. aeneus* Boh. Collected on *Helianthus* at Dallas, Texas, August 1 and September 22, and at Oklahoma City, Oklahoma, August 1, by F. C. Bishopp. Cutting off tops of *Psoralea multiflora*, in July, in Kansas; collected by C. V. Riley. Collected on artichoke at Barlow, Missouri, by C. V. Riley.

8212. *Rh. mexicanus* Gyll. "The Mexican rose beetle" (Hunter and Hinds 1904). Collected by J. C. Crawford and the writer at San Antonio, Texas, May 4, 1905, in very large numbers on *Coreopsis cardaminefolia*.

8221. *Rh. cyaneus* Lec. Feeds on willow leaves (Harrington 1891).

8222. *Rh. aeratus* Say. Taken on *Carya amara* (Harrington 1891). Collected on willow during June in Maine (Packard 1890:599).

### Subfamily Pterocolinae.

8223. *Pterocolus ovatus* Gyll. Beaten from live oak at Kissimmee, Florida, in May (Beutenmüller 1890). Beaten from plum and peach

(Scott and Fiske 1902:33). Collected on wild grape shoots (Hamilton 1895).

#### FAMILY III. ATTELABIDAE.

These weevils are leaf rollers. The adult makes a neat cut in a leaf, after laying the egg, and rolls the cut section inward, forming a little nidus, which dries and falls to the ground. The larva feeds upon the decaying case and pupates in the earth or humus.

8224. *Attelabus analis* Ill. Collected on oak sprouts in Pennsylvania (Hamilton 1895). Rolls leaves of oak and black walnut (Packard 1890: 335). Collected on scrub oak at Gurley, Texas, May 3, by A. C. Morgan, and at Handley, Texas, April 27, by J. C. Crawford.

8225. *A. nigripes* Lec. Beaten from live oak at Kissimmee, Florida, in April (Beutenmüller 1890).

8226. *A. bipustulatus* Fab. The adults eat round holes in the leaves of *Quercus* spp. For oviposition they construct a nest by making incisions in the leaves and rolling the cut section into a case which hangs by the midrib. The case shortly falls to the ground (Girault 1904; Hamilton 1895). Rolls leaves of red, post and laurel (*Q. imbricaria*) oaks. Has an April and July brood (Packard 1890:203-204).

8228. *A. rhois* Boh. Collected on oak and hazelnut trees (Hamilton 1895). Rolls leaves of alder at Holderness, New Hampshire (U. S. N. M. record). Collected on oak, basswood and hazelnut trees (Harrington 1891).

#### FAMILY IV. BYRSOPIDAE.

8229. *Thecestermus humeralis* Say. Collected under dried buffalo dung in Kansas. Cutting off blossoms of grapevines in May; also beaten from hickory in Missouri during June (Le Conte and Horn 1876:12).

#### FAMILY V. OTIORHYNCHIDAE.

The adults are frequently general feeders. The immature stages are passed under groupnd, the larvae being root feeders.

##### Tribe I. Brachyderini.

##### Group 1. Minyomeri.

##### Group 2. Epicaeri.

8232. *Graphorhinus vadosus* Say. The adult feeds on clover leaves (Webster 1882).

8233. *Epicaerus imbricatus* Say. Doing great injury to apple trees (Walsh 1863:37); destroying young growth of apple trees at Stillwater, Oklahoma; on apple at Louisiana, Missouri (Chittenden 899a). Injuring beans, beets (Comstock 1879:249); feeding on sugar beets at Grand Island, Nebraska (Bruner 1891:15); on leaves of blackberry (Chittenden); injuring cabbage (Comstock); eating leaves and puncturing stems of cabbage at Felton, Delaware (Riley 1880). Ovipositing between the terminal leaves of *Cassia marylandica* (Chittenden). Doing great injury to cherry

trees (Walsh 1863:37). Feeding on red clover blossoms (Forbes). On corn (Comstock). Collected on cotton at Victoria, Texas. On cucumbers (Comstock); feeding freely on grasses (Forbes 1890:76); injuring gooseberry bushes (Walsh). Collected on *Helianthus* at Gurley, Texas, May 28, by A. C. Morgan. On leaves of young locust (Chittenden); injuring muskmelon (Chittenden 1903:28). Injuring onions at Madisonville, Tennessee (Comstock); feeding on peach trees at Symrna, Delaware (Chittenden 1899a); feeding on pear leaves (Forbes 1886); feeding on plum trees (Chittenden); feeding on stalks of potato (Weed 1888); on radish (Comstock); on raspberry bushes at Strasburg, Virginia, and feeding on stems of strawberry at Garfield, Arkansas (Chittenden, Osborn and Mally; Garman 1895). On squash (Comstock); injuring tomato plants at Locust Grove, Maryland (Chittenden). Collected on *Verbesina wrightii* at Cotulla, Texas, May 28, by J. C. Crawford and the writer. On watermelon (Comstock). Attacked by the fungus *Sporotrichum globuliferum* (Chittenden 1900b:31).

Group 3. Barynoti.

8236. *Barynotus schoenherri* Zett. Found in ballast heaps at Sydney, Cape Breton, Nova Scotia (Harrington 1891).

Group 4. Hormori.

Group 5. Trigonoscutae.

8240. *Trigonoscuta pilosa* Motsch. Not rare on seacoast at San Francisco, California (Le Conte and Horn 1876:26).

Group 6. Calyptili.

*Exomias pellucidus*. This European weevil occurs on Long Island and Staten Island, New York. In Europe it lives on strawberry (Beutenmüller 1890).

Tribe II. Ophryastini.

Group 1. Ophryastes.

8242. *Ophryastes vittatus* Say. Found chiefly on "grease-weed" (Beutenmüller 1890).

8244. *O. latirostris* Lec. } Found on "grease-weed" (Wickham  
8245. *O. sulcirostris* Say. } 1899:77).

*O. bituberosus* Shp. Collected May 12 at Beeville, Texas, on *Rudbeckia* by J. C. Crawford.

8249. *Eupagoderes sordidus* Lec. Collected at Cotulla, Texas, May 5, on *Prosopis glandulosa* by the writer, and on *Parkinsonia* by J. C. Crawford.

Group 2. Rhigopsis.

Group 3. Strangaliodes.

8258. *Anametis granulatus* Say. Breeds under bark of apple and pear (Riley 1882:916). Collected on *Ambrosia trifida* (Hamilton 1895).

8261. *Panscopus erinaceus* Say. Taken on wild grape (Schwarz 1884:84).

8265. *Diaminus subsericeus* Lec. Around roots of cottonwood (Wickham 1889:78).

8267. *Peritaxia hispida* Lec. Recorded from *Argemone platyceras* in New Mexico, on authority of Cockerell (Knuth:369).

Group 4. Phyxeles.

Tribe III. Otiorhynchini.

Group 1. Agraphi.

Group 2. Otiorhynchi.

8283. *Otiorhynchus sulcatus* Fabr. This introduced species is injurious to numerous horticultural plants. The larvae feed on the roots of the strawberry. Collected beneath hawthorn and apple (Harrington 1891).

8284. *Otiorhynchus ovatus* Linn. The strawberry crown girdler. The larvae feed on the roots of the strawberry (Beutenmüller 1890).

8291. *Neoptachus adspersus* Boh. Feeds on oak (Riley 1882:916).

Group 3. Peritell.

8294. *Thricolepis inornata* Horn. On pear at Salem, Oregon, May 19, 1888 (collection U. S. N. M.).

8299. *Aragnomus griseus* Lec. Feeding on the foliage of young pear tree at Salem, Oregon (Collected May 19) (Riley 1888a:16).

Group 4. Trachyphloei.

Tribe IV. Dirotognathini.

8308. *Dirotognathus sordidus* Horn. Occurs very abundantly in the desert regions of Arizona under damp logs (Le Conte and Horn 1876:80).

Division II.

Tribe I. Tanymecini.

8309. *Pachnaeus opalus* Oliv. Injures orange in Florida (Riley 1882:916). Feeds in large quantities in South Florida, on the Keys, on the leaves of the lime (*Citrus*). Also found eating the leaves of *Baccharis halimifolia* and *Borrichia frutescens* (Ashmead 1880:61-62).

8310. *P. distans* Lec. Feeds on oak (Riley 1882:916).

8312. *Tanymecus confertus* Gyll. *Polyhageous*, without preference for any particular plant (Riley 1882:916). Defoliating sugar beets at Ames, Nebraska, also feeding principally on *Xanthium strumarium*, and on *Chenopodium alba* and on *Polygonum* (Bruner 1894:18). Breeds in *Hell-anthus* (Hamilton 1895). Collected May 23 at Gurley, Texas, on *Quercus* by A. C. Morgan.

8314. *Pandetelejus hilaris* Hbst. Breeding in the trunks of white oak, on which the adults may be found in May and June (Harris 1862:70; Hamilton 1895; Packard 1890:71). Found on beech trees by Chittenden (Beutenmüller 1890). Beaten from plum and peach (Scott and Fiske

1902). Collected at Handley, Texas, April 27, on *Physostegia*, by the writer.

Tribe II. Cyphini.

Group 1. Cyphi.

8316. *Compsus auricephalus* Say. Collected on cotton, May 10, at Victoria, Texas, and May 15, at Runge, Texas. Beaten from *Lantana camara*, *Ehretia elliptica* and other plants in palmetto thickets and woods, June 7 to 25. One specimen taken inside of cotton square July 1 (Townsend 1903:94).

8319. *Brachystylus acutus* Say. Found on persimmon during June in Missouri. (Riley 1882:916).

Group 2. Artipi.

8320. *Artipus floridanus* Lec. Eating the leaves of orange trees at Rockledge, Florida. Also found feeding on the leaves of the lime (*Citrus*), *Baccharis halimifolia* and *Borrchia frutescens* (Ashmead 1880:62). Feeds on leaves of oak, and juniper (Packard 1990:220).

8321. *Aramigus tessellatus* Say. Infests sweet potatoes (Popenoe 1886).

8322. *A. fulleri* Horn. The larvae are external root feeders upon roses, geraniums, strawberries, etc. The adult is wingless, and single brooded. Egg batches in clusters of 10 to 60 are placed between the loose bark and stem of a plant just above the surface of the ground, and the principal injury is effected during the larval period. The first pupa was found in California, in the ground, June 3; the first adult June 17. On July 28 the soil around the roots of the plants contained many larvae, pupae, and adults (Maskew 1904). A great many plants suffer from the attack of this weevil as the following records will indicate. Feeding on *Abutilon*, *Achyranthes*, *Azalea*, *Begonia* (Chittenden 1901:88). Injuring begonia at Stewarton and Ottawa, Canada (Fletcher 1890). Injures camellias in eastern United States, and also very destructive at Los Angeles, California, in 1889, to camellias and *Canna indica*; injuring carnations in eastern United States and feeding on *Dracaena*, *Gardenia* (cape jessamine), geraniums, *Hibiscus*, Hilo grass; injuring lemon grove in California and Hawaii. Injurious to lilies (Chittenden); injuring lilies at Stewarton and Ottawa, Canada (Fletcher). Feeding on oak; very injurious to orange groves in California (Chittenden). Beaten from plum and peach in Georgia (Scott and Fiske 1902). Adults defoliating Java plum in Hawaii; feeding on *Plumbago*, primrose, roses in greenhouses (Chittenden). Injuring strawberry in California (Maskew); very destructive in 1889 to palms (*Washingtonia filifera*) in Los Angeles county, California (Chittenden).

8323. *Phacepholis elegans* Horn. Taken on cotton at Victoria, Texas, April 27 and May 2, by C. M. Walker, and on *Verbesina encelioides* at Co-tulla, Texas, May 9, by F. C. Pratt.

8326. *Achrastenus griseus* Horn. Mr. R. C. Howell, in studying the

injuries of this species, reports that the adults feed only on the buds of the peach, apple and pear trees during March, April and early May, with the result that the trees are set back considerably and show a stunted appearance. Trees severely injured in 1903 were killed in 1904. It is very possible that this was from root injury by the same species. Eggs are laid in masses among the fallen dead leaves. Nothing further is known of the immature stages. The species is recorded from Lovelady, Texas, May 29, 1905, destroying peach buds; April 22, copulating on both peach and pear trees; from Tyler, Texas, April 25, 1905, copulating and feeding on buds of apple; May 2, on apple; May 3, ovipositing on leaves, females dying immediately after oviposition; May 27, no weevils to be found. The species has been taken at Houston, Grape Vine, Lovelady, Sidney, Tyler, and Wharton, Texas.

Group 3. Aphrastini.

8327. *Aphrastus taeniatatus* Gyll. Lives on paw-paw (Riley 1882:916). Collected on osage orange (collection U. S. N. M.).

8328. *A. unicolor* Horn. Collected at Cotulla, Texas, May 5, on *Coreopsis cardaminefolia* and *Verbesina encelioides* by J. C. Crawford and the writer, and May 11, on *Monarda punctatus*, by F. C. Pratt.

Tribe III. Evotini.

Group 1. Exophthalmi.

Group 2. Omilei.

8330. *Omileus epicaeroides* Horn. Very injurious to the foliage of oak and peach at Dialville, Texas. The eggs are laid in bunches of two to nine upon fallen foliage or rubbish, the leaf being folded over them. The eggs hatch in from three to eight weeks, the average being about a month. They hatch mostly about the middle of May. The larvae feed on roots, probably of oak. On account of the absence of wings, bands of sticky paper around the basis of the peach trees are recommended (Sanderson 1906:210-212).

Group 3. Evoti.

Tribe IV. Phyllobiini.

8334. *Scythropus elegans* Couper. Found by F. H. Chittenden in abundance on *Pinus strobus* at Ithaca, New York (Beutenmüller 1890).

8336. *Mitostylus tenuis* Horn. Taken on *Grindelia squarrosa nuda* at Clarendon, Texas, September 19, by C. R. Jones. Found in large numbers at Victoria, Texas, October 14, feeding on *Amphiachyris dracunculoides* by J. D. Mitchell.

8338. *Coleocerus marmoratus* Lec. Beaten from *Leucaena pulverulenta* and other plants in palmetto thickets and woods, June 7 to 25. In copula June 9 (Townsend 1893:94).

Tribe V. Promecopini.

The larvae probably feed on roots of leguminous plants.

8340. *Eudiagogus pulcher* Fahrs. Found feeding in large numbers

on *Cassia occidentalis* and *C. obtusifolia* at Enterprise, Florida, in May (Beutenmüller 1890). On June 6, 1906, the writer found it in large numbers defoliating various leguminous plants at Logansport, Louisiana. At Victoria, Texas, it was taken on March 25 by C. M. Walker and on August 1 by W. E. Hinds on cotton. Abundant on leaves and branches of *Sesbania vesicaria*, in copula and eating leaves, June 5 to July 3 (Townsend 1893:94).

8341. *E. rosenschoeldi* Fahrs. Found in considerable numbers associated with the preceding species at Logansport, Louisiana, by the writer. Feeding on *Cassia occidentalis* and *C. obtusifolia* (Beutenmüller 1890).

FAMILY VI. CURCULIONIDAE.

Subfamily 1. Sitoninae.

The Sitoninae are probably all root feeders in the larval stages.

8342. *Sitones lineolus* Gyll. Injurious to clover and lucerne in Europe (Beutenmüller 1890).

8343. *S. californicus* Fahr. Injuring buds of fruit trees at Portland, Oregon (collection U. S. N. M.). Collected at Dallas, Texas, August 8, on apple, and July 28, on plum, by S. Goes, and at Gurley, Texas, July 14, on peach, by A. C. Morgan.

8346. *S. hispidulus* Germ. Lives on the roots of clover (Beutenmüller 1890).

8347. *S. flavescens* Allard. Injurious to clover and lucerne in Europe (Beutenmüller). Probably introduced in earth around roots of shrubs or trees (Le Conte and Horn 1876:115).

Subfamily II. Alophinae.

8351. *Plinthodes taeniatus* Lec. Beaten from small alder bushes in the Orange mountains, New Jersey (Beutenmüller 1890).

Subfamily III. Ithycerinae.

8361. *Ithycerus noveboracensis* Forst. Sometimes quite injurious to fruit trees by gnawing off the tender buds (Riley 1871:57). Feeding on buds of apple and peach at Rome, Georgia (Quaintance 1899:58). Destroying apple trees by cutting off leaves and twigs at Sidna, Virginia (Howard 1900:106). Occurs on white and bur oaks and hickory. The larva bores in the tender twigs (Beutenmüller 1890). Found on beach trees (Harrington 1880:52).

Subfamily IV. Apioninae.

The Apioninae are all seed or gall infesting weevils.

8373. *Apion sordidum* Sm. Develops in large numbers in the galls of a Cecidomyid on *Bigelovia* and causes the death of the gall-maker. From galls on *Artemesia* (Smith 1884:48).

8403. *A. herculanum* Sm. Taken on flowers of *Viburnum acerifolia* (Hamilton 1888:67).



8405. *A. walshi* Sm. Bred from *Cecidomyia* galls on *Salix strobiloides* (Le Conte and Horn 1876:410).

8411. *A. segnipēs* Say. Bred from seeds of *Tephrosia virginica* and also seeds of *Astragalus*, according to Say (Le Conte and Horn 1876:411). Collected on *Quercus* at Handley, Texas, April 27, by the writer.

8413. *A. fraternum* Sm. Found by F. H. Chittenden on two species of *Lespedeza* (Beutenmüller 1890). Breeds in *Phaseolus pauciflora* (Smith 1884:60).

8423. *A. rostrum* Say. Infests seed of *Baptisia leucantha* (Le Conte and Horn 1876:411). Infests seed pods of *Baptisia leucantha* (Beutenmüller 1890).

8424. *A. nigrum* Hbst. Depredates the leaves of *Robinia pseudacacia* (Beutenmüller 1890).

*Apion xanthoxyli* Fall. Bred in numbers from seeds of *Xanthoxylum pterota* in Lower Rio Grande region. Also bred from same seeds at San Diego, Texas, by F. A. Schwarz (Townsend 1893:95).

8426. *Podapion gallicola* Riley. Makes a spherical or ovoid gall on *Pinus inops* (Riley 1883:61). *Copturus longulus* is a messmate in these galls (Schwarz 1894:15). Inhabits galls on *Pinus resinosa* (Packard 1890:714).

#### Subfamily V. Curculioninae.

##### Tribe I. Phytonomini.

This tribe is characterized by external feeding larvae. Pupation is in coarse silken cocoons spun on the plant.

##### Group 1. Phytonomi.

8427. *Phytonomus punctatus* Fab. External feeder on clover. The eggs are deposited in irregular clusters, mostly in the hollow leaf-stems or flower stalks, or in crevices near the base of the plant. The young larvae are yellowish, often becoming greenish. They feed in a curved position and seem to cling to the plant by means of the folds of the body catching the hairs of the leaves, as they are legless. Until the third molt they eat little round holes in the leaves. After this molt they feed at the sides of the leaves, eating out large, irregular patches. The larval period is about 40 days in summer. They feed generally at night and hide in the day time under rubbish; the anus plays an important part in locomotion, emitting a viscous liquid. The larvae drop when approached. Pupation is in a silken cocoon, spun on the leaves or ground. Larvae of *Collops quadrimaculatus* Fabr. were found feeding on the eggs (Riley 1881:171-178). Beutenmüller (1890) records this weevil also from timothy grass. At Annapolis Junction, Maryland, about April 14, this species was almost controlled by the fungus *Empusa* (*Entomophthora*) *sphaerosperma* (Johnson 1898:93; 1900:81). The species is controlled in Ontario by *Entomophthora phytonomi* (Fletcher 1900:96).

8430. *Ph. comptus* Say. Bred from *Polygonum nodosum*, upon which

the larvae and pupae may be found in July, the cocoon having the usual network appearance (Riley 1881:171).

8431. *Ph. eximius* Lec. Breeds and makes cocoon on *Rumex britanica* (Popenoe 1877:38).

8434. *Ph. nigrirostris* Fab. Feeds on clover (*Trifolium pratense*), and *Buphthalmum salicifolium* (Riley 1881:171).

Group 2. Listroderi.

8439. *Listronotus obliquus* Lec. Found on cotton at Cameron, Louisiana, September 10.

8445. *L. caudatus* Say. Robertson records from *Polygonum hydropiperoides* (Knuth:369).

8448. *L. appendiculatus* Boh. Lovell records from *Sagittaria latifolia* (Knuth:369).

8453. *L. latiusculus* Boh. C. M. Weed collected in all stages on stalks of *Sagittaria variabilis* (Beutenmüller 1890).

8456. *L. setosus* Lec. Collected on cotton at Victoria, Texas, May 23, by C. M. Walker.

8467. *Hyperodes porcellus* Say. Collected on rice at Markham, Texas, June 8, by C. F. Chillson.

8468. *H. vittaticollis* K. Collected on cotton at Victoria, Texas, June 8, by C. M. Walker.

Tribe II. Emphyastini.

Tribe III. Hylobiini.

The weevils of this tribe breed under the bark of trees. Pupation is in chip cocoons at the end of the burrow.

8472. *Pissodes strobi* Peck. Injurious to white pine, spruce and cedar. The attack is principally during the sapling period. Oviposition is in bark of 1-year terminal shoots, mainly the most vigorous shoots. The larvae burrow under the bark, completely separating it and causing the death of the terminal down to the upper whorl of branches. Pupation is in a chip cocoon in the pith and outer wood of the dead terminal, in which they mature during July and August of the same year. The effect of the work is to render the tree of no commercial value by causing it to be deformed. It also breeds in the bark of the lower portions of the trunk of pines and spruce, hastening the death of the injured trees (Hopkins 1906:252; 1904:34). *Bracon pissodis* Ashm. is described as a primary parasite, collected August 19, 1886, at Wellsley, Massachusetts (Ashmead 1890:348).

8473. *P. costatus* Mann. Occurs in Rocky mountain and Pacific slope region. Attacks bark of stems of saplings of several species of pine, causing ugly scars on the sides of the stems, resulting in deformed growth, or death. Prefers main stem from near ground to upper branches (Hopkins 1906:253).

8474. *P. fasciatus* Lec. Attack saplings of Douglas Spruce, killing them by boring beneath the bark toward the base and along the stem (Hopkins 1906:253).

8475. *P. affinis* Rand. Found in bark of white pine stump (Hopkins 1906:253).

8476. *P. dubius* Rand. Larvae mine the inner bark of the stem of large saplings of balsam fir or trees which have been previously injured (Hopkins 1905:254; 1904:34).

8478. *Pachylobius pictivorus* Germ. The larvae bore into the inner bark of the stumps and roots of recently-felled, dying and injured pine (Hopkins 1904:34). Beaten from plum and peach (Scott and Fiske 1902).

8479. *Hyllobius pales* Hbst. The larvae bore into the inner bark of stumps and roots of recently-felled, dying and injured pine (Hopkins 1904:34). Beaten from plum and peach (Scott and Fiske 1902).

8481. *Hilipus apicatus* Oliv. Attacks pine (Packard 1890:726).

8482. *Hypomolyx piceus* Deg. Attacks pine (Packard 1890:726).

8483. *Eudocimus mannerheimii* Boh. The adults feed on the bark of bald-cypress twigs, causing their death, and the larvae mine the inner bark of injured and recently-felled trees (Hopkins 1904:34).

#### Tribe IV. Cleonini.

The species of the genus *Lixus* are stem weevils, frequently causing an elongate, gall-like swelling of the stem. Pupation occurs in the burrow or gall. The species have as a rule one generation a year.

8487. *Lixus rubellus* Rand. Observed in considerable numbers clinging to the leaves and blossoms of *Polygonum amphibium* (Webster 1882:746; 1889).

8491. *L. silvius* Boh. Breeds in *Erigeron canadense* in Texas (Sanderson 1904).

8494. *L. parvus* Lec. The larvae form galls in the stems of *Amelanchier* in California (Riley 1888c:33; Webster 1889).

8497. *L. mucidus* Lec. Puncturing stalk and eating out the heart of young corn at Shawnee, Ohio (Webster and Mally 1898:100). *Neocatolacus tylodermae* Ashm. has been bred as a primary parasite (collection U. S. N. M.).

8498. *L. concavus* Say. Feeds on the stems and midribs of rhubarb (*Rheum raponticum*). The larvae work in the stem, in the foot stalks, and the pupal cells are made in the stems just below the surface of the earth, the top of the cell lying level with the surface. The species breeds also in the stems of *Helianthus grosseserratus* in Illinois; in *Rumex crispus* and *R. obtusifolia* in New York. *Glyptomorpha rugator* was bred as a primary parasite at Columbus, Ohio (Chittenden 1900b:61-69; Glover 1865:90; Webster 1889:11). Bred from gall in stalk of thistle (Beutenmüller 1890).

8499. *L. musculus* Say. Mr. C. R. Jones and the writer found this species breeding in the stems of *Polygonum pennsylvanicum* at Clarendon, Texas, in August and September, 1905. The writer also found it breeding in the same plant at Dallas, Texas, in October, 1906. The eggs are laid in the stems near the joints. As the plant feels the attack it forms a cylindrical gall above the joint, thus allowing the larvae sufficient space to develop. The galls are twice the diameter of the stem and about three-quarters of an inch long. The adults completely fill the cells; they gnaw a round hole in front of the head and gradually work themselves out. They frequently hibernate in these cells. A Pyralid larva which bores in the stems seems to be very fond of *Lixus* and large numbers of the weevils in all stages are consumed by these caterpillars. As primary parasites *Glyptomorpha rugator* Say was the commonest at Clarendon. It forms an elongate parchment cocoon at the side of the remains of the weevil larva and issues in the following May. *Necotelaccus tylodermae* Ashm., *Eurytoma tylodermatis* Ashm., *Cerambycobius cyaniceps* Ashm. and *Glyptomorpha novitus* Cr. were bred as primary parasites at Clarendon, and the latter also at Dallas. (See Plate I, Figs. 1-3.)

8501. *L. scrobicollis* Boh. W. E. Hinds and W. W. Yothers have found this weevil breeding in *Ambrosia psilostachya* at Victoria, Texas. At Dallas, Texas, it also breeds in *Ambrosia trifida*. The eggs are laid in long rows up and down the stalk, the rough scars on the outside indicating their location. The larvae hollow out the entire stem, sometimes forming an almost complete chain of cells. The weevils emerge from the old stems in April and May, oviposit probably in June. Weevil larvae were found July 12, 1906, at Dallas. Unhatched eggs were still found at Victoria, Texas, by A. C. Morgan, on August 18, 1906. On October 11, Mr. R. A. Cushman and the writer found the first pupae, at Dallas. *Glyptomorpha rugator* Say has been bred at Victoria, Texas, as a primary parasite. *Vipio belfragei* Cr., *Glyptomorpha mavaritus* Cr., and *Bracon* (?) *liri* Ashm. (Hopkins 1892:256-257), have been bred from the weevil and *Microdus simillimus* Cr. is a probable parasite (Hopkins 1892:259). This species was collected on cotton at Dallas, Texas, June 17, by F. C. Bishopp; on *Helianthus* at San Antonio, May 4, by the writer, and at Gurley, May 28, by A. C. Morgan; on strawberry at Denison, April 21, by A. W. Morrill; and on *Verbesina encelioides* at Kerrville, May 31, by F. C. Pratt. "See Plate I, Fig. 4.)

8504. *L. macer* Lec. Breeds in the stem of *Helianthus grosse-serratus*, the larva girdling the stem from within at the upper end of the burrow and plugging up the girdle with the fibre. The beetle issues from the cut end (Webster 1889:11). Bred from the stems of *Chenopodium hybridum*, the larvae boring down the axis of the stem, and the adult issuing through a circular hole in the side of the stem.

8522. *Cleonus quadrilineatus* Chev. Makes large, elongate cells on

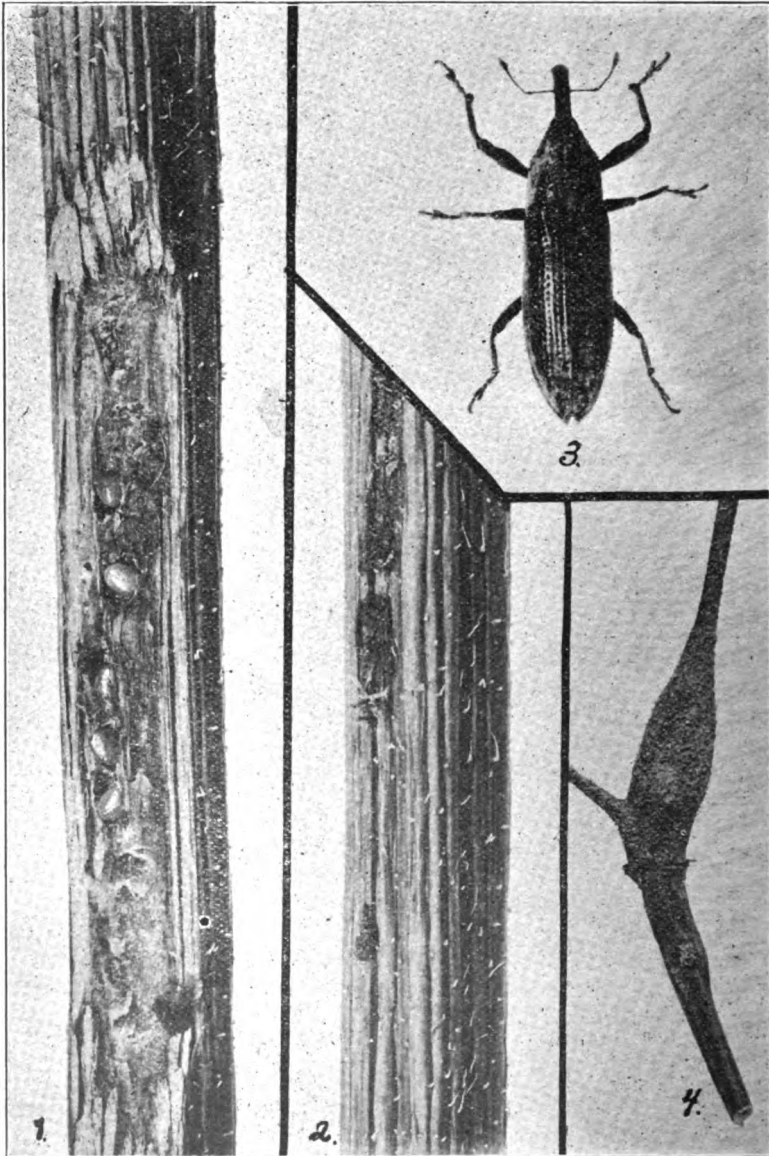


PLATE I.

roots of *Astragalus* at Sulphur Springs Valley, Arizona; found by H. G. Hubbard, June 27.

Tribe V. Eriirhinini.

Group 1. Eriirhini.

8529. *Dorytomus mucidus* Say. On willow (Hunter and Hinds 1904). Breeds in blossoms of cottonwood (Sanderson 1904).

8532. *Dorytomus brevicollis* Lec. On willow (Hamilton 1895).

8536. *Dorytomus squamosus* Lec. Bred in July from Cecidomyid gall (*Salicis brassicoides* Walsh). Adults were observed April 20 and larvae July 26 (Walsh 1866).

8543. *Notaris puncticollis* Lec. Breeds in swamps (Hamilton 1895).

Group 2. Desmori.

The species of *Desmoris* and *Smicronyx* are as far as known flower or gall weevils. They pupate in the ground.

8545. *Desmoris scapalis* Lec. On *Grindelia squarrosa* (Sanderson 1904). On *Argemone alba*, *Armaranthus graecizans*, and *Prionopsis ciliata* (Hunter and Hinds 1904). Collected on cotton at Gurley, Texas, May 28, by A. C. Morgan; and on *Grindelia squarrosa nuda* at Clarendon, Texas, August 11, by the writer. *Sideranthus rubiginosus* is the principal host plant. The adults are found feeding on the tender leaf buds during June and July throughout Texas. The earliest larva was found by W. W. Yothers, July 25, in buds from Corsicana, Texas. The oviposition continues throughout August and September. The larvae feed in the heads among the achenes, forming a hard cell of excrement. When the head ripens the seed are expelled and the larva, finding itself on the ground, burrows into the soil and forms an earthen cell. In this cell it remains as a larva until about May 31. On this date the writer found the first pupa at Dallas. Larvae were found as late as July 2. The first adult was found on *Sideranthus*, May 31, by W. H. Gilson at Arlington, Texas. *Bracon mellitor* Say and the variety known as *Bracon dorsator* Say were both bred during September, 1905, by F. C. Pratt from material collected at Mexia, Texas. (See Plate II, Fig. 2; Plate III, Fig. 2.)

8546. *D. constrictus* Say. This is the sunflower weevil. It breeds in the seed of sunflowers, the larvae pupating in the ground. The species occurs throughout Texas.

8547. *Barytychius amoenus* Say. Found on Ambrosia (Hamilton 1886:114). Taken on *Helenium tenuifolium* at New Boston, Texas, August 29, 30, by F. C. Bishopp, and on *Monarda* at Rosser, Texas, July 6, by C. R. Jones.

8548. *B. discoideus* Lec. Breeding in flower heads of *Helenium tenuifolium* (Schwarz 1884:84).

8551. *Smicronyx griseus* Lec. On *Ambrosia* (Hamilton 1886:114).

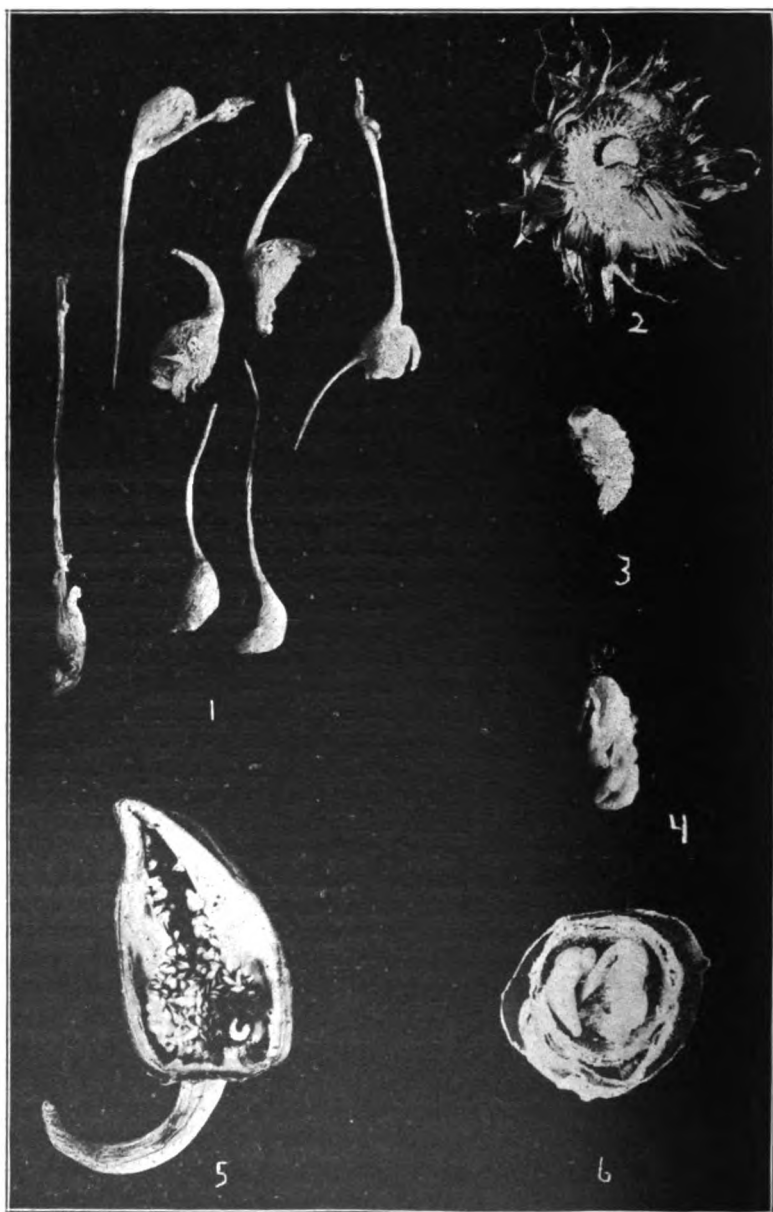


PLATE II.

8555. *S. tychoides* Lec. On *Ambrosia* (Hamilton 1886:114). Breeding in *Cuscuta arvensis* and parasitized by *Bracon smicronygis* Ashm. mss., at Washington, D. C., July 24, 1879 (Riley 1890:350). This species was bred by A. C. Morgan and C. R. Jones at Victoria, Texas, from *Cuscuta* stem galls, on August 1. The larvae enter the ground for pupation, remaining in their earthen cell twelve to twenty days. (See Plate II, Fig. 1.)

8558. *S. fulvus* Lec. Taken on *Helianthus* at Oklahoma City, Oklahoma, August 1, by F. C. Bishopp.

8562. *S. corniculatus* Fabr. From *Salix discolor* in Wisconsin, on authority of S. Graenicher (Knuth:369).

10923. *S. spretus* Dietz. Taken by W. E. Hinds on cotton at Victoria, Texas, April 26, and at Baird, Texas, August 24; and by J. C. Crawford on *Opuntia* at San Antonio, Texas, June 3.

Group 3. Eugnomi.

Group 4. Cryptopli.

The weevils in this group are found in low, wet places.

8572. *Endalus aeratus* Lec. Two specimens taken on *Abutilon* sp. and another plant, June 5, in the lower Rio Grande Valley (Townsend 1893:95).

8576. *Tanysphyrus lemnae* Gyll. This species is semiaquatic (Schwarz 1888:75). Collected on *Lemna* (Hamilton 1895).

Group 5. Stenopelmi.

8577. *Stenopelmus rufinasus* Gyll. Semiaquatic (Schwarz 1888:75).

Group 6. Brachypil.

8578. *Anchodemus angustus* Lec. Eating the leaves of *Sagittaria* sp. (Hamilton 1886:118).

8591. *Lixellus filiformis* Lec. Aquatic (Schwarz 1888:75).

Group 7. Hydronomi.

8582. *Lissorhoptrus simplex* Say. Found doing considerable damage to rice at Beaumont, Texas, in June, 1904, by the writer. On June 28 larvae were found burrowing in the roots of the rice, consuming the entire interior and causing the plants to die. Pupation probably occurs in a cell at the tip of the root. Pupae were found as late as July 11, although adults were bred July 2. The species is semiaquatic. One specimen was taken on *Baptisia*, March 30, at Victoria, Texas, by W. E. Hinds.

The species of the genus *Bagous* are all semiaquatic (Schwarz 188:75).

Group 8. Phycocoetes.

Tribe VI. Trachodini.

Tribe VII. Otidocephalini.

The Otidocephalini are known as gall-infesting weevils.



*Otidoccephalus scrobicollis* Boh. On black oak during May (Hamilton 1895).

8607. *O. chevrolatii* Horn. On elm and hickory (Harrington 1884:118). On hazel in Nebraska, collected by Prof. Bruner.

8608. *O. laevicollis* Horn. Bred from galls of *Cynips* on oak by Riley (Beutenmüller 1890). On hickory (Hamilton 1895).

8610. *O. dichrous* Lec. Taken on old leaves of *Chamaerops palmetto* at Lake Harney and Enterprise, Florida, by Messrs. Hubbard and Schwarz (Le Conte and Horn 1876:192).

#### Tribe VIII. Magdalini.

The species of this tribe are bark-borers, pupating in the wood.

8611. *Magdalis perforata* Horn. Found on white pine at Karner, New York (Felt 1903:500).

8612. *M. cuneiformis* Horn. Breeds in terminal growths of *Pinus ponderosus* in northwest Nebraska (Bruner).

8613. *M. lecontei* Horn. Very common on hard pine in New York (Felt 1902a:64).

8615. *M. barbata* Say. Ovipositing in fallen hickory (*Hicoria amara*) (Harrington 1885:18). Breeds under the bark of elm, pupates in cell in bark (Felt 1902b:Pl. III).

8616. *M. aenescens* Lec. Very injurious to apple trees at Sunnysdale, Washington. The larvae burrow under the bark, causing discoloration spots on the outside. The burrows or tunnels start in a majority of cases from the butt of a tree and often continue upward 5 feet from the ground. They are mostly found in the larger limbs. Injuring apple also at Corvallis, Oregon, and Victoria, British Columbia, and feeding on leaves of cherry at Gabriola Island, British Columbia. The egg burrow is generally in or adjoining spots attacked by the fungus *Macrophoma mali* "black spot"). A species of *Dinotus* and *Chiropachys colon* Linn. have been bred as primary and *Asecodes albitarsis* Ashm. as a secondary parasite (Chittenden 1900a:37).

8617. *M. olyra* Hbst. Burrows under bark of oak (Beutenmüller 1890). Found in all stages in branches of *Hicoria alba* April 29, in West Virginia, and parasitized (?) by *Spathius canadensis* Ashm. (Hopkins 1892:258).

8625. *M. armicollis* Say. Breeds under bark of elm (Felt 1902b:Pl. III).

8627. *M. alutacea* Lec. Probably bores in the terminal twigs of *Pinus inops* (Riley 1883:62).

#### Tribe IX. Anthonomini.

The species of this tribe infest buds, flowers, fruit, seed and galls. The larvae invariably pupate in the feeding cell instead of entering the ground.

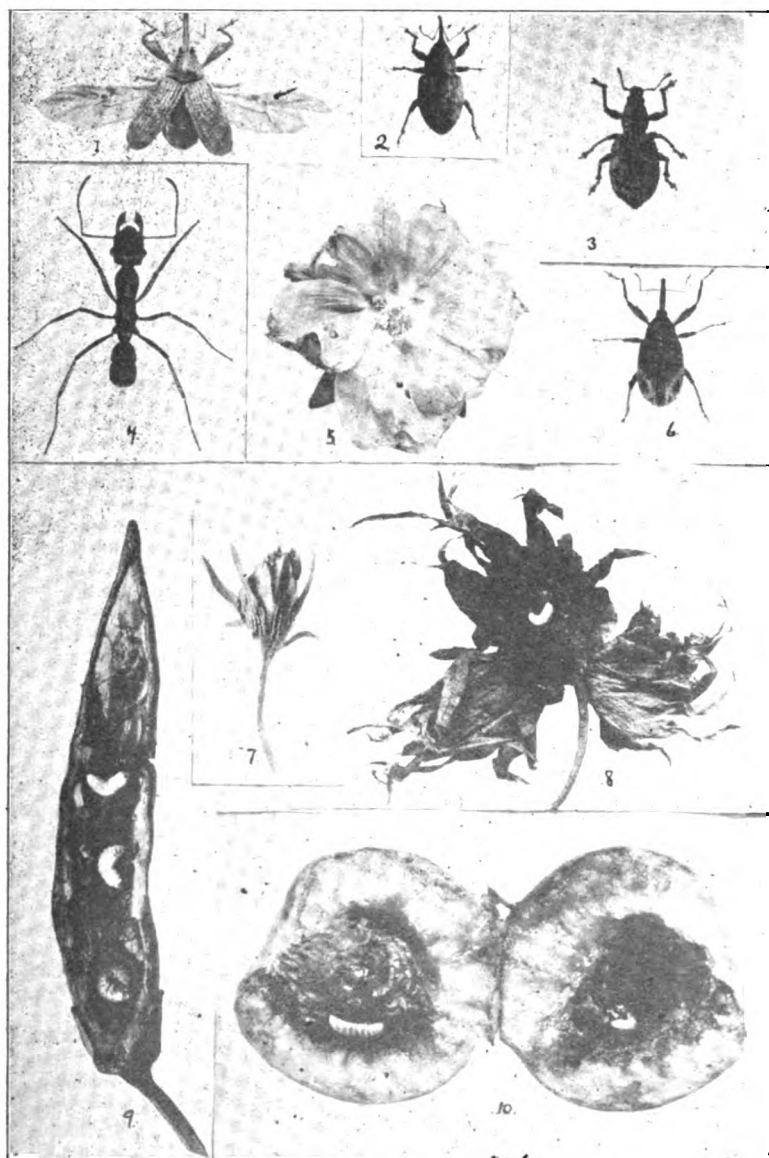


PLATE III.

8681. *Macrorhoptus estriatus* Lec. This little weevil is frequently found in the flowers of *Callirrhoe involucrata* in Texas. It oviposits in the seed capsule, causing a little wart to form. The larva feeds within the confines of two carpels, forming a clear, little cell in which pupation takes place. It is essentially a spring or early summer weevil. It has also been collected on *Althaea rosea* at Victoria, Texas, April 23, by W. W. Yothers; on *Helianthus* at San Antonio, Texas, June 26, by J. C. Crawford; and on *Kuhnistera multiflora* at Ardmore, Indian Territory, June 26, by C. R. Jones.

8630. *Tachypterus quadrigibbus* Say. Abundant on *Crataegus oxyacantha* (Dietz 1891:187). Breeds in the heart of the apple and pear (Beutenmüller 1890).

8629. *Coccotorus scutellaris* Lec. Breeds in plum pits, the larva eating its way in through the flesh. Pupation occurs in the pit. The species also occurs in apples.

10974. *C. hirsutus* Bruner. Breeds in *Prunus pumilo* in Nebraska (Bruner 1888:124).

8651. *Anthonomocyllus elegans* Lec. Found on scrub oak in Florida (Schwarz 1878).

10975. *A. leucostictus* Dietz. Numbers bred from seeds of *Xanthoxylum pterota*, July 4, by C. H. T. Townsend in the Lower Rio Grande, and by E. A. Schwarz at San Diego, Texas (Townsend 1903:90).

*A. xanthoxyli* Linell. Beaten in large numbers from *Xanthoxylum pterota* in edge of palmetto thicket near Santo Thomas, Texas, June 27. From a handful of green *Xanthoxylum* berries gathered on this date, bred fifty-two weevils up to July 4. On August 20 only a few specimens could be obtained by beating. The weevils apparently breed singly in the seeds (Townsend 1903:96).

8650. *A. pusillus* Lec. Lives in the seed pods of the frost weed (*Helianthemum canadense*) in Massachusetts (Blanchard 1887:87).

8632. *Anthonomorphus fulvus* Lec. This weevil appears in the spring with the first blooms of *Callirrhoe involucrata*, being first recorded in 1906, on May 3, by J. C. Crawford. The adults feed on the floral column. The egg is laid in the flower bud and the larva develops at the expense of the floral column, finally eating its way into the capsule and pupating, or if the flower has been sealed properly and prevented from opening, pupation may take place in the fallen corolla. The last buds were found July 12, 1906, one adult being found in a flower. From the buds collected at this time one adult was bred July 23. W. W. Yothers bred one female *Bracon mellitor* Say from material collected at Dallas on June 14, 1905, and five days later he bred a male *Bracon mellitor* Say from the same material. These two parasites are undoubtedly identical. (See Plate III, Figs. 5-7).

8634. *Paranthonomus profundus* Lec. Mr. Schwarz states that this species breeds in *Crataegus* buds.

10984. *Anthonomus pomorum* Linn. This species, the "pomacha," is recorded from Ohio by Dietz. In Europe it breeds in the buds of apples, pears, and cherries, causing the buds to drop. This is said to be sometimes decidedly beneficial in preventing the overloading of the limbs (Köppen 1880:224).

10985. *A. grandis* Boh. The cotton boll weevil is an insect which for many years has had an undisputed advance northward and eastward across Central America, Mexico, and through Texas, and Louisiana, into Oklahoma and Arkansas. It also occurs in Cuba. The spread is through a general dispersion which takes place each fall. Cotton is the only known food plant. The larvae feed and pupate in the squares or bolls, the number of generations being limited only by the limit of cotton growth. The injured fruit generally falls to the ground, where the developing weevil is protected from the sun by the foliage. Hibernation may be in the immature stages, although it generally occurs in the adult. This weevil has many enemies. Two fungus diseases, *Aspergillus* and *Cordyceps*, have been recorded. Two mites, *Pediculoides ventricosus* Newp., in Mexico, and *Tyroglyphus breviceps* Banks, in Texas, attack it. The Clerid *Hydnocera pubescens* Lec. is predaceous in its larval stages. *Apiomerus spissipes*, a Reduviid, appears to be predaceous on the adults. The "kelep" *Ectatomma tuberculatum* Ol. is predaceous on the adults in Guatemala, while the little ants, *Formica fusca subpolita perpilosa*, in Mexico, and *Solenopsis geminata* Fabr., in Guatemala and Texas, attack the larvae in the squares. The primary Hymenopterous parasites are *Torymus anthonomi* Cwfd. in Texas; *Eurytoma tylodermatis* Ashm. in Mexico and United States; *Bruchophagus herrerae* Ashm. in Mexico; *Cerambycobius cyaniceps*, *Catolaccus incertus*, *Sigalphus curculionis* Fitch, and *Urosigalphus anthonomi* Cwfd. in Texas; *Urosigalphus schwarzi* Cwfd. in Guatemala; *Bracon mellitor* Say in Mexico and the United States. One dipterous parasite has been bred on several occasions—*Myiophasia aenea* Wied. No specific reference to the breeding of these parasites is given here, as the writer has treated the subject very comprehensively elsewhere (Pierce 1907b).

8633. *A. gularis* Lec. Oviposits in the flowers of *Cassia marylandica* (Schwarz 1884:84).

8642. *A. rustipennis* Lec. Numbers collected on *Cassia chamaecrista* at MacNab, Arkansas, September 15, by J. D. Mitchell.

8641. *A. sycophanta* Walsh. Bred from the Tenthredinid galls of *Nematus* (T. gall *Salicis pomum* Walsh, T. gall *Salicis desmodoides* Walsh), and of *Euura* (T. gall *Salicis nodus* Walsh) on Willow. Larvae and pupae July 29 (Walsh 1866).

8643. *A. suturalis* Lec. Attacks the cranberry, ovipositing in the bud, and then cutting the stem, causing the bud to fall to the ground (Lugger 1899).

*A. suturalis* Lec. Inquillinous in Aphidien galls, *Caryaeglobuli* Walsh, and *Caryaefoliae* Fitch. Bred June 20-26 (Walsh 1866).

8646. *A. flavicornis* Boh. Inquillinous in a globular acarid gall on the leaves of *Solanum eleagnifolium* (Schwarz 1884:84).

8649. *A. corvulus* Lec. Found upon flowers of *Cornus* in May (Harrington 1891:24). From *Cornus alternifolia* (Knuth:369).

8638. *A. signatus* Say. Breeds in the buds of strawberries, blackberry, raspberry, dewberry, and *Rubus villosus* (Chittenden 1893a:167-186), and also *Potentilla canadensis* and *Cercis canadensis* (Chittenden 1897), causing the bud to drop. Pupation occurs in the bud in a cell formed from the exuviae of the larva. The adults frequent also *Cornus florida* and *Monarda fistulosa* (Chittenden 1893). The species has been taken by A. W. Morrill on strawberry at Bald Knob, Arkansas, April 25, and Tyler, Texas, April 13 and 28, and on blackberry at Denison, Texas, April 21. It is parasitized by *Catolaccus anthonomae* Ashm.

8644. *A. musculus* Say, found on huckleberry (Dietz 1891).

8648. *A. nigrinus* Boh. Breeds in buds of *Solanum carolinense* and potato (*Solanum tuberosum*) (Chittenden 1895:350-352). In buds of *Solanum carolinense* sent from Washington, the larvae made their cells in the center of the bud through all the anthers and the pistil, thus making it impossible for the bud to open. In this manner it differs in habit from *Anthonomus aeneolus*. Chittenden records it as parasitized by *Entedon lithocolletidis* Ashm., and *Phanerotoma tibialis* Hald. *Catolaccus incertus* Ashm. is also a primary parasite.

10999. *A. albopilosus* Dietz. Breeds in the seed of *Croton capitatus*, and *C. engelmanni*; possibly also in *C. texense*, upon which it has been taken. The adults have frequently been collected on the Solanums, and are known to feed on the foliage of the Crotons. The egg puncture can be seen from the exterior of the seed capsule on account of the thick stellate pubescence, but is very prominent on the inside of the hull. The larva generally eats out the interior of two of the three seeds, sometimes all three, and pupates in the last. It has been found in all stages at Johnson's Bayou, Louisiana, August 26, 1906, on *C. engelmanni*; at Olivia, Texas, September 2, on the same species; at Victoria, Texas, September 6, on *C. capitatus* and *C. engelmanni*, and at Texarkana, Arkansas, September 10, on *C. engelmanni* by J. D. Mitchell; also at Leesville, Louisiana, September 29, on *C. capitatus* by F. C. Bishopp. *Catolaccus incertus* was bred as a parasite from the Leesville and Johnson's Bayou material, *Cerambycobius cyaniceps* was bred from the latter material, and *Bracon mellitor* was bred from the Victoria material.

11000. *A. xanthocnemus* Dietz. Mr. Schwarz says this species breeds in the blue Solanum galls at San Antonio, Victoria, Cuero and Columbus, Texas.

11001. *A. aeneolus* Dietz. Breeds in the buds of *Solanum torreyi* and probably also in the buds of *S. rostratum* and *S. eleagnifolium*, as it has been taken on these species. It occurs throughout Texas. The egg puncture is generally near the tip of the bud and is often sealed as in the

cotton square. On the inside there is frequently considerable proliferation. The larva feeds almost entirely in the interior of the anthers, generally drawing two together and sealing them by means of its excrement, thus forming a cell between the two. It remains in situ when the flower opens. The injury often causes the bud or the flower to be separated by a layer of epithelium and to fall, although sometimes fertilization may be accomplished. The larva generally pupates after the bud falls. The pupal period is at the minimum four days. Townsend (1893) records this species as breeding in the fruit of *Solanum elegnifolium* at Eagle Pass, Texas, and Ciudad Porfirio Díaz, Coahuila, in July.

8637. *A. scutellatus* Gyll. Beaten in abundance from plum and peach (Scott and Fiske 1902:34). Gillette (1890:280) records *Sigalphus canadensis* as a parasite of this species, which he calls the plum gouger.

*A. mexicanus* Boh. This species has been found around Victoria, Texas, by E. A. Schwarz. It was bred July 22, at Tlahualilo, Mexico, by A. W. Morrill from peppers.

*A. eugeni* Champ (?). This species is very injurious to peppers in Mexico (Meraz 1905). The adults may subsist on Indian corn in the absence of peppers. *Pediculoides ventricosus* is found to attack it. This species is possibly identical with the preceding.

*A. aeneotinctus* Champ. This is another pepper weevil possibly identical with *A. mexicanus*. Specimens were bred July 22, at Tlahualilo, Mexico, by A. W. Morrill from peppers. It has been found breeding in peppers of various varieties at San Antonio and Bourne, Texas, between October 4 and November 4. The egg puncture causes a wart-like swelling on the exterior of the pepper and frequently brings about proliferation within. The larvae feed upon the pulp of the pepper, many being found in a single fruit. They pupate in cells formed from exuvia. *Bracon mellitor* Say was bred by F. C. Pratt, October 18 and 25, from peppers collected at San Antonio, Texas.

8640. *A. juniperinus* Sanborn. Breeds in *Podysoma*, a parasitic fungus on juniper (Sanborn).

8652. *A. squamosus* Lec. This species was found by C. R. Jones and the writer at Clarendon, Texas, August 11 and September 19, 1905, breeding in the heads of *Grindelia squarrosa nuda*. The weevil oviposits through the involucre near the base, causing several bracts to turn brown. The larva feeds on the achenes and forms a compact cell from its exuvia, which becomes very hard, due to the action of the gum of the flower. Pupation occurs in this cell, the adult emerging from the dry seed head. The species was also found by the writer breeding in the heads of *Grindelia inuloides*. *Bracon mellitor* Say and *Eurytoma tylo-dermatis* Ashm. have been bred as parasites from the Clarendon material.

8658. *A. disjunctus* Lec. This species was found by C. R. Jones and the writer at Jacksonville, Texas, October 11 and 12, breeding in the

heads of *Heterotheca subaxillaris*. The weevil's biology is exactly parallel to that of the preceding species. It has been found parasitized by *Eurytoma tylodermatis* Ashm.

8657. *A. pauperculus* Lec. According to Mr. Schwarz this species breeds in the buds of *Riddelia*.

*A. moleculus* Casey. Occurs on *Solidago* at Rosser, Virginia, according to F. H. Chittenden.

8665. *A. nubilus* Lec. According to Mr. Schwarz this species was bred from *Ascyrum hypericoides* at Plummers Island, Maryland.

*A. testaceosquamosus* Linell. Seven specimens collected in heads of flower buds and on stems of *Abutilon holosericeum*, June 17 to 24. This weevil probably breeds in the seed capsules of this plant (Townsend 1903:95).

8668. *Cnemocyllus decipiens* Lec. This species has been beaten abundantly from *Crataegus* by Dr. Hamilton. Taken on cotton at Victoria, Texas, by W. E. Hinds, and on *Callirrhoe involucrata* at Dallas, Texas, July 13, by W. W. Yothers.

8669. *C. canus* Lec. According to Mr. Schwarz this species breeds in Dipterous galls of *Eurota* on *Bigelovia graveolus*.

8660. *C. elongatus* Lec. Mr. Schwarz states that this species breeds in a twig gall on *Bigelovia* in Colorado.

11915. *C. ligatus* Dietz. Rather numerously beaten from clumps of *Koerberlinia spinosa* in openings in the woods back of Fort Brown, Texas, July 3 (Townsend 1903:95).

8661. *Pseudanthonomus crataegi* Walsh. This species is inquilinous in the Cecidomyid gall *Crataegi plica* on *Crataegus crus-galli* (Walsh 1866).

11019. *P. incipiens* Dietz. May be beaten in multitudes from laurel (*Kalmia angustifolia*) when just out of bloom (Hamilton 1886).

8673. *Orchestes pallicornis* Say. Taken on low leaves of willow in July by Chittenden (Beutenmüller 1890). The "apple leaf flea-weevil" (Forbes 1902:147).

8677. *O. niger* Horn. Found on willow when in bloom (Harrington 1884:119). Taken on low leaves of willow in July (Beutenmüller 1890).

8678. *O. ephippiatus* Say. Taken in abundance on *Salix fragilis* at Staten Island, New York (Beutenmüller 1890).

8679. *O. subhirtus* Horn. Taken on willow when in bloom (Harrington 1884:119).

11042. *O. armatus* Dietz. Taken on hickory (Hamilton 1895).

8682. *Elleschus bipunctatus* Linn. On willow (Harrington 1891).

8683. *E. ephippiatus* Say. Taken in abundance on *Salix fragilis* (Beutenmüller 1890). Bred from Cecidomyid gall (*Salicis strobiloides* O. S., August 22-29 (Walsh 1866).

11039. *E. scanicus* Payk. On willow (Hamilton 1895).

8628. *Acalyptus carpini* Hbst. On willow (Harrington 1891).

Tribe X. Prionomerini.

8685. *Piazorhinus scutellaris* Say. On hickory during July in Canada (Harrington 1891).

8686. *P. pictus* Lec. On oak during June in Pennsylvania (Hamilton 1895).

Tribe XI. Tychiini.

8691. *Plocetes ulmi* Lec. On elm August 5, 1874. Makes a noise similar to that of the plum curculio (Le Conte and Horn 1876:214).

8689. *Thysanocnemis fraxini* Lec. Several females collected by Mr. Pettit on ash trees in Canada (Le Conte and Horn 1876:214). Infests seed of ash in Nebraska, according to Professor Bruner.

8690. *Th. helveolus* Lec. The same habit as the preceding. The species of the genus *Tychius* pupate in the ground.

8696. *Tychius sordidus* Lec. This species breeds in the seed pods of *Baptisia bracteata* in Texas (Sanderson 1904), and in *B. leucantha* pods at Logansport, Louisiana. At the latter place larvae were found June 7, 1906. The larvae eat the pod clean, sometimes two or three occurring in a single pod; they then eat their way out and pupate in the ground. Pupae and teneral adults were found in cells in the ground July 6.

11053. *T. sibinioides* Casey. Taken on *Prosopis glandulosa* at San Antonio, Texas, May 31, by A. C. Morgan.

*T. sulcatulus* Casey. Abundant in prairie grass (Sanderson 1904).

Tribe XII. Cionini.

8704. *Cionus scrophulariae* Oliv. Attacks the fruit of plum, feeding in the kernel. In Europe it is found on *Scrophularia* and *Verbascum* (Beutenmüller 1890).

8705. *Gymnetron teter* Sch. Found in abundance on the stalk of mullen (*Verbascum thapsus*). The larva lives in the seed pods (Beutenmüller 1890). Collected on *Mesadenia tuberosa* and *Aster* at Ladonia, Texas, May 17, by F. C. Bishopp, and on *Achillea lanulosa* at Ardmore, Indian Territory, May 24, by C. R. Jones.

8706. *Miarus hispidulus* Lec. Breeds in the seed capsules of *Lobelia inflata* (Blanchard 1887:87).

Tribe XIII. Derelomini.

8708. *Notolomus bicolor* Lec. On *Chamaerops palmetto* in Florida (Le Conte and Horn 1876:222).

8710. *N. basalis* Lec. Common on leaves of *Chamaerops palmetto* in Florida (Le Conte and Horn 1876:223).



## Tribe XIV. Laemosaccini.

*Laemosaccus* sp. Two specimens of this doubtless new species were taken on stalks of *Abutilon holosericeum* at Santo Tomas, June 6. On June 18 two specimens were found in cells inside a dead stalk of the same plant and one on stems of a live plant. The species breeds in the stalks. A specimen was taken by Wickham on a live cotton stalk, June 28 (Townsend 1903:96).

## Tribe XV. Cryptorhynchini.

## Group 1. Ithypori.

The weevils of the genus *Conotrachelus* all pupate in the ground. Beyond this there is no similarity of habit, as some are stem weevils and some fruit weevils.

8712. *Conotrachelus jugandis* Lec. This weevil inhabits walnuts (Beutenmüller 1890). Parasitized by *Myiophasia aenea* Wied (Coquillett 1897).

8713. *C. albicinctus* Lec. A number beaten from *Clematis drummondii* and *Celtis* in palmetto jungle at Santo Tomas, Texas, June 9-23 (Townsend 1903:97).

8714. *C. nenuphar* Harris. Breeds in wild plum, wild crabapple, hawthorn, plum, peach, cherry, nectarine, apricot, apple, and pear (Quaintance 1906:325-330). Recorded from *Cornus alternifolia* by Lovell (Knuth). The egg puncture is isolated by a crescent-shaped cut. The larvae leave the fruit and pupate in the ground, being under ground over half a month. *Anaphes conotracheli* Girault is an important egg parasite, while *Sigalphus curculionis* Fitch and *Porizon conotracheli* Riley attack the larvae. (See Plate III, Fig. 10.)

8716. *C. seniculus* Lec. Beaten from plum and peach, fairly common (Scott and Fiske 1902).

8717. *C. affinis* Boh. At Logansport, Louisiana, on June 7, 1906, the writer found larvae of this species in fallen hickory nuts. The egg puncture is not sealed and hence there is considerable opportunity for Dipterous larvae to follow up the weevil and kill it. *Myiophasia aenea*, a Tachinid, is an important parasite which pupates within the skin of its host. On July 6 two adults were found in their cells in the ground.

8718. *C. elegans* Say. The breeding records of this species are so diverse that the writer thinks a confusion of determination has taken place. It is recorded as breeding upon the roots of *Amaranthus retroflexus* in Maryland, the larvae feeding upon the underground stems within a few inches of the surface, and pupating in loose cells in the earth (Chittenden 1898:94). It is also recorded as "busily engaged the last of May laying its eggs in the partly rolled-up leaves of the pig-nut hickory (*Hicoria glabra*) and during the process, cutting off the leaves, which hang down, wither and turn black (Packard 1881). Recorded as "common on hickory, on the leaves of which the larvae live" (Hamilton 1895:376). Recorded from *Pinus rigida* by Say (Say 1831:283).

8721. *C. crataegi* Walsh. The "quince curculio" adult eats a little hole into the fruit, in which it places the egg. The larvae in the quince until early fall, when they leave it and burrow into the ground, pupating in early spring (Banks 1902). On *Crataegus tomentosa* (Packard 1890:535).

8726. *C. naso* Lec. Bred from the fruit of hawthorn (*Crataegus*) (Hamilton 1889:34). Breeds in acorns of post-oak (Sanderson 1904). Collected on cotton at Victoria, Texas, at which place Mr. J. D. Mitchell also records 266 larvae from 167 acorns of *Quercus virginiana* between October 7 and 14. The larvae entered the ground immediately, remaining quiet until about March 7. On March 15 the first pupa was observed. The first adult appeared April 2.

8727. *C. posticatus* Boh. The larvae dwell within the galls of certain *Phylloxera* on hickory leaves, the Phylloxeras probably perishing from starvation (Schwarz 1894:16). A specimen of *Sigalphus copturi* Riley was presumably bred from this species at Washington, D. C., June 19, 1865.

8730. *C. geminatus* Dej. On *Ambrosia trifida* (Hamilton 1875).

8735. *C. anaglypticus* Fahr. Breeds in the fruit of walnut according to Say. Beaten from plum and peach, common (Scott and Fiske 1902:34).

8736. *C. leucophaeatus* Fahr. Breeds in *Amaranthus* stems (Sanderson 1904). Breeds in the stems of *Euphorbia marginata* at Dallas, Texas, the larvae being found throughout the summer. One specimen taken on *Leucaena pulverulenta* in edge of palmetto thicket at Santa Tomas, Texas, June 7 (Townsend 1903:97). Taken on cotton at Victoria, Denton, Runge, and San Antonio, Texas; on corn at Dallas; and on *Quercus* at Gurley.

8737. *C. fissunguis* Lec. According to E. A. Schwarz and F. C. Pratt this species breeds in *Hibiscus mocheutus*.

8738. *C. erinaceus* Lec. Taken on cotton at Blossom, Texas, June 3, and Hemphill, Texas, May 1; also on *Baptisia* at Greenville, Texas, April 28.

The species of *Rhyssematus* also pupate in the ground, as do the species of the preceding genus.

8741. *Rhyssematus palmarcolis* Say. Bred from the fungus *Cystopus ipomoea-panduranae* on *Ipomoea pandurata* in Ohio (Webster and Mally 1898:100). Taken on *Asclepias latifolia* at Clarendon, Texas, August 11, by the writer; and on cotton at Blossom, Texas, June 3.

8742. *Rh. lineaticollis* Say. Breeds in the pods of *Asclepias latifolia* at Clarendon, Texas, larvae being found by C. R. Jones and the writer August 11. Taken on the same plant by A. W. Morrill at Childress, Texas, June 22; and on *Quercus* by A. C. Morgan at Gurley, Texas, August 11. Breeding in pods of *Asclepias corymbosa* and parasitized by

*Bracon rhysemati* Ashm. mss. at La Fayette, Indiana, March 29, 1889 (Ashmead 1890:350). On *Asclepias cornuti*, July 19, in Illinois (Hart 1907:248).

8743. *Rh. aequalis* Horn. On *Ambrosia trifida* in August (Hamilton 1895).

8745. *Rh. pruinosis* Horn. Breeds in *Acacia greggii* in southern Texas (Townsend 1903:97).

The species of the genus *Chalcodermus* pupate in the feeding cell, instead of entering the ground as the two preceding genera.

8746. *Chalcodermus aeneus* Boh. This species breeds in cow-peas, beans, and string beans, the adult frequently feeding on leaves and stems of cotton when it follows cow-peas (Chittenden 1904:30-43). One adult was bred by W. E. Hinds from a cotton square collected at Mexia, Texas, July 31, 1905. Beaten from plum and peach, common (Scott and Fiske 1902:34). Taken on sugar cane at Baton Rouge, Louisiana, July 14, by R. C. Howell. Parasitized by *Myiophasia aenea* Wied (*Ennyomma clistoides* Town.) and *Sigalphus* sp. (Chittenden 1904).

8748. *C. collaris* Horn. Taken on cotton at Victoria, Texas, May 9, by C. M. Walker. On *Oenothera biennis* in Illinois (Hart 1907:248).

#### Group 2. Acampiti.

#### Group 3. Cryptorhynchi.

As far the breeding habits of *Acalles* are known to the writer, all of the species breed in *Opuntia*, pupating in the larval feeding cell.

8758. *Acalles nobilis* Lec. This species has been found breeding in *Opuntia* leaves at Corpus Christi, larvae and one pupa being found March 25, while on May 6 all were mature, though still in their cells. The cell is made of a loose cocoon of frass in the center of the large, circular disc eaten by the larva. The exterior of the leaf shows a large, dry, yellow area over the cell. From material collected at Beeville, on April 7, a larva and pupa were secured. (Plate IV, Figs. 1-8.)

8761. *A. turbidus* Lec. Has been found breeding in *Opuntia* at Floresville, Cotulla, and Live Oak, Texas.

8762. *A. clathratus* Lec. Very numerous on *Opuntia leptocaulis*, breeding in the ends of the shoots, June 5, in lower Texas. This species kills the ends of the shoots of the plant, the grub eating out the inside portion and forming a cell in which it transforms (Townsend 1903:97).

The species of *Tyloderma* are stem borers, which pupate in the larval feeding cell.

8779. *Tyloderma foveolatum* Say. This species is a stem borer, breeding in the stems of *Oenothera biennis*, and *Epilobium* (Beutenmüller 1890). At South McAlester, Indian Territory, Mr. J. D. Mitchell took, on June 22, 1906, three pairs in copula, and two pairs feeding on leaves side by side. Larvae were also found burrowing in the stem of the plant,

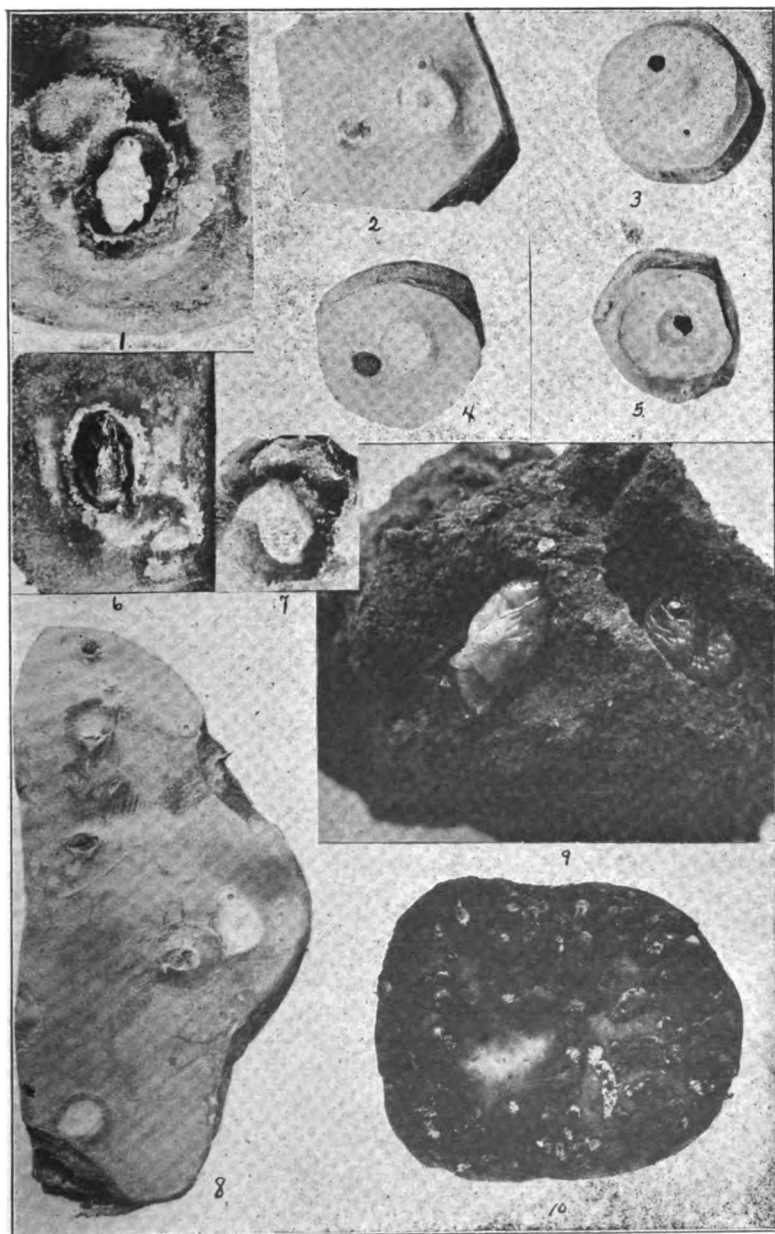


PLATE IV.

which was undetermined. Mr. F. C. Chittenden bred *Eurytoma tyloder-matis* Ashm. from this species, September 23, at Rosslyn, Virginia, and *Cerambycobius cyaniceps* Ashm., September 11, at Chevy Chase, Maryland.

8781. *T. fragariae* Riley. Breeds in the crown and roots of the straw-berry (Beutenmüller 1890). *Bracon analcidis* Ashm. is described as a primary parasite at St. Louis, Missouri (Ashmead 1888:619).

8784. *T. baridium* Lec. Taken on cotton, April 1, at Hemphill, Texas, by A. W. Morrill.

8785. *Phyrdenus undatus* Lec. Beaten from plum and peach, fairly common (Scott and Fiske 1902:34).

The species of *Cryptorhynchus* are bark borers.

8786. *Cryptorhynchus parochus* Say. Live under the bark of butter-nut (Schaupp 1881:35). The larvae mine the inner bark and sapwood of weakened and recently dead walnut (Hopkins 1904:34).

8787. *C. bisignatus* Say. Found on the leaves of oak by Packard. Several specimens were taken by F. H. Chittenden in May, at Clifton, New Jersey, on a chestnut log, and in June some were found copulating on another chestnut log; also taken on a living trunk of birch infested with *Scolytids* (Beutenmüller 1890).

8795. *C. fallax* Lec. Found on cotton at Victoria, Texas, May 23, by C. M. Walker. Breeds in trunk of hickory (Hamilton 1895).

11073. *C. lapathi* Linn. Bores in the stems of willow and alder (Beutenmüller 1890).

#### Tribe XVI. Zygonini.

8809. *Gelus oculatus* Say. On basswood (Harrington 1891).

8816. *Copturodes longulus* Lec. The larvae inhabit the galls of *Podapion gallicola*, but are mere messmates, and their presence is not detrimental to the welfare of the author of the gall (Schwarz 1894:15). One specimen of *Sigalphus copturi* Riley was presumably bred from this species in a *Podapion gallicola* gall on *Pinus inops* June 2, 1883, at Washington, D. C.

8820. *Acoptus suturalis* Lec. Lives in the dead wood of beech trees. F. H. Chittenden has found the adult in the wood, March 27 to April 20, in company with larvae. One of the larvae appeared about ready to pupate May 26. The beetles were crawling on the trunk of the tree early in July. Copulating on hickory stumps (Harrington 1891). Bores in hickory (Packard 1890).

#### Tribe XVII. Tachygonini.

8821. *Tachygonus lecontei* Gyll. Found on the under side of leaves of young oaks (Zimmermann 1840).

8822. *T. centralis* Lec. On *Rhus aromaticum* (Le Conte and Horn 1876:266).

## Tribe XVIII. Ceutorhynchini.

## Group 1. Mononychi.

8825. *Mononychus vulpeculus* Boh. Infests the seed pods of the blue flag (*Iris*) (Beutenmüller 1890). Occurs on the flowers of *Ceanothus americanus* and *Verbascum thapsus* (Say 1831:286). From *Iris versicolor*, the adult a pollen and bud feeder, the larvae in the seed pods (Knuth).

## Group 2. Coeliodes.

8826. *Crapontius inaequalis* Say. Breeds in grapes, the larva feeding in the fruit without causing it to drop. It leaves the grape when full grown and pupates in the earth (Walsh 1868).

8829. *Auleutes tenuipes* Lec. This species was found breeding in the buds of *Galpisia hartwegi* at Dallas, Texas. The first larvae were found May 9, 1906; the first pupa were obtained May 18; the first adults were bred May 28, although some were collected May 25. The puncture is very cleverly concealed and the buds show no sign of injury, until about ready to open, when they occasionally become slightly distorted. The larvae commence at the lower end and feed entirely on the inside of one anther, being often still there, but exposed, when the flower opens and lifts the anthers upwards. Numerous larvae were found in the open flowers in the mornings up to 10 o'clock and but few were dead. When very small the larvae are white, but as they grow they become yellowish. They are possessed of a remarkable ambulatory power, emitting a liquid through which they can glide. They either leave the bud before opening, or shortly after opening, in most cases, although the writer has found a fallen flower containing a healthy larva. The period of egg and larva in the flower is about eleven days. Pupation occurs in the the ground, a very hard, cylindrical cell being made, with the head end somewhat flattened and the apex rounded. The larva is in the ground three days before pupation, it remains seven days as a pupa, and three days as a teneral adult before issuing. The period is therefore at least 24 days. Several primary parasites were bred, among which was *Catolaccus incertus* Ashm. One specimen of this weevil was collected August 11 on *Helianthus*, at Clarendon, Texas, by C. R. Jones.

8830. *Auleutes asper* Lec. Taken on *Epilobium* (Dietz 1896).

8832. *A. nebulosus* Lec. On miscellaneous vegetation near water (Harrington 1891). On *Polygonum* (Hamilton 1895).

8834. *Coeliodes apicalis* Dietz (*flavicaudis* Boh). Found on *Urtica dioica* in great abundance from May to July, according to Chittenden (Beutenmüller 1890). On *Urtica* (Hamilton 1895).

8835. *Acanthoscelis acephalus* Say. Abundant on *Oenothera biennis* along the coast of New Jersey, during May, June and July (Beutenmüller 1890); on the same plant on Illinois sands (Hart 1907:248). On *Polygonum* and *Oenothera* (Hamilton 1895).

## Group 3. Ceutorhynchi.

The species of *Ceutorhynchus* breed in the stems or roots of plants and enter the ground for pupation.

8838. *Ceutorhynchus rapae* Gyll. Injures cabbage at Racine, Wisconsin; injures kale at St. Charles, Missouri; taken in large numbers on *Sisymbrium officinale*; turnips and horseradish at Washington, D. C. (Chittenden 1900b:39); on cabbage in great numbers at Glasgow, Missouri (Murtfeldt 1888:136); from *Bursa bursa-pastoris* at Cabin John, Maryland (Chittenden 1902a:78). The larvae burrow in the stem of the cabbage mainly, and when full grown leave it near the surface of the ground to pupate in little earthen cells. *Omphale livida* Ashm. has been bred as a primary parasite at Tennallytown, D. C.

8852. *C. septentrionis* Gyll. Recorded this species from Washington, D. C., on horseradish, mustard and *Barbarea barbarea* (Chittenden 1900b:53).

*C. adjunctus* Dietz. On *Stanleya* in Utah, and Nevada (Chittenden 1900b:53).

*C. cyanipennis* Ill. From grass (Jülich 1889:57). In Europe it attacks *Sinapis arvensis*, *Bursa bursa-pastoris*, *Achillea millefolium*, cabbage, rape, and horseradish.

*C. hamiltoni* Dietz. From *Cakile americana* in Massachusetts (Chittenden 1900b:53).

*C. quadridens* Panz. Occurs along the Atlantic coast on cultivated plants, cabbage, kale, and turnip (Chittenden 1900b:51, 52). In Europe breeds in roots of rape (*Brassica napus*), flowers of horseradish (*Cochlearia armoracia*), stems of cabbage, mustard (*Sinapis nigra*), and watercress (*Nasturtium officinale*).

## Group IV. Phytobii.

8856. *Phytobius velatus* Gyll. Occurs on *Potamogeton* under water in Europe (Le Conte and Horn 1876:281). Found in all stages under water on the filiform leaves of *Myriophyllum spicatum* in Europe. The plant is also common in North America. The larvae are covered with a viscous liquid insoluble in water. When about to pupate, the body is covered with a large quantity of the gum, which is excreted from the anus. This hardens into a spherical cocoon, which is firmly attached to a petiole or branch of the plant. The larvae remain constantly under water (Perris).

8857. *Pelenomus sulcicollis* Fahr. Taken on *Polygonum* (Hamilton 1895).

8863. *Rhinoncus occidentalis* Dietz (*pericarpus* Gyll.). Collected on *Euphorbia marginata* at Clarendon, Texas, August 11, by C. R. Jones.

8864. *R. pyrrhopus* Boh. Feeding on leaves of *Rumex*. (Beutenmüller 1890). Collected on *Euphorbia marginata* and *Polygonum pennsylv.*

*vanicum* at Clarendon, Texas, August 11, by C. R. Jones. Taken on *Polygonum* (Hamilton 1895).

8865. *R. longulus* Lec. Collected on *Polygonum virginianum* (Hamilton 1895).

Tribe XIX. Barini.

The species of the genus *Baris* breed in roots, channelling the roots beneath the bark. Pupation takes place in the larval burrow.

8870. *Baris striata* Say. Collected on *Ambrosia psilostachya* at Victoria, Texas, by A. C. Morgan, May 13; and on *Helenium tenuifolium* at Rosser, Texas, by F. C. Bishopp, July 6.

8869. *B. umbilicata* Lec. A specimen probably of this species was collected on *Leptilon canadense* at Ardmore, Indian Territory, August 17, by C. R. Jones.

*B. xanthii* Pierce. This new species was bred from the roots of *Xanthium commune* at Dallas, Texas. On August 15, 1906, the writer found adults in large numbers feeding on the tip stems between the flowers. The weevils eat out a little cell between two heads and there feed on the stem in concealment. On August 29 larvae were found burrowing in the roots. On October 2 a pupa was found in a root.

11091. *B. cuneipennis* Casey. On September 17, 1906, the writer found this species in all stages, breeding in the roots of *Helenium tenuifolium* at Dallas; 16.1 per cent of all stages found were parasitized, mainly by a species of *Bracon*.

8872. *B. transversa* Say. Four specimens beaten from *Cnicus virginianus* and a hemp-like plant in palmetto thicket at Santa Tomas, Texas, June 7 to 16, being in copula on the latter date (Townsend 1903:98). Collected on *Ambrosia psilostachya* at Victoria, Texas, May 13, and Wharton, Texas, May 9, by A. C. Morgan, and at Terrell, Texas, June 9, by S. Goes.

*B. monardae* Pierce. Bred in large numbers from the roots of *Monarda citriodora* at Dallas, Texas. On June 26, 1906, the writer found larvae in every root. On October 4 the majority were in the adult stages, but some were still larvae and pupae. They evidently hibernate in these dead roots as adults. The developmental period is at least five months.

8878. *B. confinis* Lec. Collected on *Coreopsis cardaminefolia* at San Antonio, Texas, May 4, by the writer.

8879. *B. aerea* Boh. Collected on *Aster* at Jacksonville, Texas, October 11, by C. R. Jones.

*Stenobaris avicenniae* Linell. Taken on *Avicennia nitida* at Punta Gorda, Florida, July 14 (Linell 1897).

11133. *Onychobaris mystica* Casey. Southern Arizona and New Mexico to southern Texas, on *Opuntia leptocaulis*, according to Schwarz (Townsend 1903:98).



8907. *Madarellus undulatus* Boh. On *Ampelopsis* (Hamilton 1895).

11142. *M. cuneatus* Casey. Beaten from vines in palmetto jungle at Santo Tomas, June 16. Lives in the stems of *Vitis* sp. (Townsend).

8901. *Aulobaris scolopax* Say. Collected in large numbers by F. C. Pratt and J. D. Mitchell at Dallas, Texas, July 3, 1906, the adults feeding on the buds of *Vernonia baldwinii* and burrowing in the heads of *Carduus*.

8904. *Ampelogypter sesostris* Lec. Makes a gall on the grapevine (Riley 1883:61-62).

8905. *A. ater* Lec. Makes a gall on the grapevine (Riley 1883:61). From *Ampelopsis quinquefolia* (Le Conte and Horn 1876:300) (Hamilton 1895).

8886. *Pseudobaris farcta* Lec. Collected on cotton at Mexia, Texas, August 19, by S. Goes.

8888. *P. nigrina* Say. Collected on cotton at Jefferson, Texas, October 7, by the writer.

11146. *P. discreta* Casey. One specimen beaten from *Oniscus virginianus* in palmetto jungle at Santo Tomas, Texas, June 7 (Townsend 1903:98).

8883. *Trichobaris texana* Lec. Breeds in the stems of *Solanum rostratum* at Willis, Texas (Bridwell 1904:45). At Dallas, Texas, this species breeds very abundantly. The earliest record for adults is May 15 (W. E. Hinds). On June 26, 1906, the writer found larvae burrowing near the roots, and also found one pupa in a white cell of frass. On July 12, in a stem five inches long, found ten larvae with a little wad of frass separating each cell from its neighbor. In this frass were the head shields of the early molts. On October 11 and 20, larvae and pupa were still to be found. Breeding is therefore continuous and indeterminate. One *Cerambycobius cyaniceps* was bred October 30 as a primary parasite. Specimens were collected on cotton at Victoria, Texas, April 20, and Alice, Texas, March 23 (W. E. Hinds); on *Datura stramonium* at Tyler, Texas, May 27, by R. C. Howell; and on *Achillea lanulosa* at Ardmore, Indian Territory, May 24, by C. R. Jones.

8884. *T. trinotata* Say. Breeds in the stems of potato, *Solanum carolinense*, *S. melongena* (egg plant), *S. rostratum*, *Datura stramonium*, *D. tatula*, *Physalis longifolia*, *P. philadelphica*, *P. lanceolata*, *P. heterophylla*, *P. virginiana ambigua*, and *Xanthium canadense*. It hibernates as an adult. *Sigalphus curculionis* Fitch is a primary parasite (Chittenden 1902a:9-18).

11152. *T. insolita* Casey. Injury to tobacco stalks in Florida is ascribed to this species (Chittenden 1902b:69).

11153. *T. compacta* Casey. Bred by T. D. A. Cockerell from *Datura meteloides* in Mesilla Valley, New Mexico (Chittenden 1902a:11).

*T. mucorea* Lec. Breeds in potato, tobacco, *Solanum carolinense*, *Datura stramonium*, *D. tatula*, and *D. meteloides* at Willis, Texas. Only one brood a year (Bridwell 1904:45).

8866. *Orthoris crotchii* Lec. This species was found breeding in the pods of *Mentzelia nuda* at Clarendon, Texas, in August and September, by C. R. Jones and the writer. A large number of weevils may breed in one pod, often making their cells of excrement side by side in longitudinal rows within the center of five or six of the disc-like seeds. Exit is secured through the open apex of the ripened pod. *Bracon nuperus* Cr., *Eurytoma tylodermatidis* Ashm. and a species of *Tetrastichus* are primary parasites, while another closely-related species of *Tetrastichus* is parasitic on *Bracon nuperus*. The species of *Tetrastichus* occur in large numbers to each host. (See Plate II, Fig. 4.)

11155. *O. cylindrifer* Casey. This species was found by the writer to breed in the stems and roots of *Mentzelia oligosperma* at Dallas, Texas. Adults were found on the plants June 18, 1906, and on June 26 larvae were found in the stems of every plant examined, all burrowing toward the roots. These plants grow on rocky ground, and have thick, elongate, tuberous roots. After the larvae have entered the root the stem breaks very easily at the point of attachment. The larvae only burrow an inch or so into the root, and then turn around and pupate in a cell of frass. On July 25, larvae, pupae and adults were found in the roots and stems.

8928. *Centrinus picummus* Hbst. Taken by Robertson on *Mellilotus alba* and *Aruncus aruncus* (Knuth). Found very abundantly at the nectaries of cotton throughout Texas. Collected also on *Aster* at Leesville, Louisiana, April 28 (Hinds), and *Ladonia*, Texas, May 17 (Bishopp); on *Asclepias* at Durant, Indian Territory, June 2 (Bishopp); on *Amphitachyris dracunculoides* at Dallas, Texas, September 22 (Jones); at Ardmore, Indian Territory, on *Solidago missouriensis*, August 18, on *Lespedeza frutescens*, August 17, and on *Achillea lanulosa*, May 24 (Jones); on *Helenium tenuifolium* at New Boston, Texas, August 30 (Bishopp); on *Solidago* and *Euthamia graminifolia* at Jacksonville, Texas, October 11 (Jones); on *Lythrum lanceolatum* at Paris, Texas, August 28 (Bishopp); on *Asclepias latifolia* at Dallas, Texas, May 18 (Bishopp); on *Eupatorium serotinum* at Palestine, Texas, October 12 (Howell); on strawberry at Denison, Texas, April 21 (Morrill), and on *Passiflora incarnata* at Dallas, Texas, July 26 (Pierce).

11159. *C. flnitimus* Casey. Collected on cotton at Mexia, Texas, July 7, by S. Goes.

8929. *C. perscitus* Sch. Gnawing small holes in the leaf stems of sugar beets at Lincoln, Nebraska (Bruner 1891:16).

8918. *C. penicellus* Hbst. Gnawing small holes in the leaf stems of sugar beets at Grand Island, Nebraska (Bruner 1891:16). Collected in cotton flowers (Hunter and Hinds 1905:66).

8917. *C. scutellum-album* Say. On flower heads of daisy (Beutenmüller 1890). Taken by Robertson on *houstonia purpurea*, *Melilotus alba*, *Kneiffia fruticosa* (as a pollen feeder), *Pycnanthemum lanceolatum*, *P. linifolium*, *Rudbeckia hirta* (as a pollen feeder) (Knuth). Collected on *Helianthus* at Mathis, Texas, May 7, by A. W. Morrill.

11166. *C. denticornis* Casey. At Logansport, Louisiana, on June 7, 1906, the writer found large numbers of this species on the flowers of *Rudbeckia hirta* and *Satureia hortensis*, but could not find them breeding. Also taken on the former plant at Paris, Texas, August 28, by F. C. Bishopp; on *Quercus* at Gurley, Texas, May 23 (Morgan); on *Verbesina helianthoides*, and *Achillea* at Durant, Indian Territory, June 2 (Bishopp); on *Solidago* at Atoka, Indian Territory, August 31 (Jones), and on *Kuhnistera multiflora* at Ardmore, Indian Territory, June 26 and July 12 (Jones).

11167. *C. salebrosus* Casey. Collected on *Aster* at Leesville, Louisiana, April 28 (Hinds, Howell); on *Asclepias* at Victoria, Texas, May 25 (Yothers), and on *Achillea lanulosa* at Ardmore, Indian Territory, May 24 (Jones).

11169. *C. pulverulentus* Casey. Collected on *Rudbeckia* at Beeville, Texas, May 12 (Crawford), and on *Anogra pallida* at Corpus Christi, Texas, April 12 (Bishopp).

*Centrinopus alternatus* Casey. Collected on *Eupatorium purpureum* (Hamilton 1895).

*Pachybaris xanthoxyli* Linell. Collected on *Xanthoxylum pterota* at San Diego, Texas, by E. A. Schwarz, and at Brownsville, Texas, by H. S. Barber.

8933. *Nicentrus lineicollis* Boh. Collected on *Ceanothus* (Hamilton 1895).

11178. *Centrinites strigicollis* Casey. Taken by Robertson on *Melanthium virginicum*, and as a pollen feeder on *Trillium sessile* (Knuth).

8934. *Linnobaris punctiger* Lec. Taken on cotton field at Victoria, Texas, February 1 (W. E. Hinds).

8939. *L. cana* Lec. One specimen taken on *Abutilon holosericeum* at Santo Tomas, June 6 (Townsend 1903:98).

8936. *L. calva* Lec. Collected on *Crataegus* in July (Hamilton 1895).

8937. *L. rectirostris* Lec. Collected on *Nuphor* in June (Hamilton 1895). Found in wet localities during June in Ontario on *Scirpus eriophorum*, in copula, or depositing eggs in the lower portions of the stems. Pupation occurs in the upper part of the larval burrow in the following May.

8943. *L. prolixus* Lec. Common on sedges and aquatic plants (Harrington 1891).

8910. *Idiostethus tubulatus* Say. On *Crataegus* (Hamilton 1895).

Found in flowers of orchids in June, and on *Habenaria psychodes* in July (Harrington 1884).

8948. *I. subcalvus* Lec. Taken by Robertson on *Caulophyllum thalictroides* (Knuth).

*Zygobaris xanthozyla* Pierce. Breeds in the berries of *Xanthoxylum* at Beeville, Texas, and Runge, Texas. Large quantities of larvae were found in the berries at these places May 8 and 9, 1906, by A. C. Morgan. On May 11 the larvae began to enter the ground, pupating between May 21 and 24, and beginning to mature by May 31. The larval period in the ground is from 10 to 13 days, and the pupal period from 7 to 10 days. The species is abundantly parasitized by *Sigalphus zygobaridis* Cwfd., the larvae of which are carried into the ground, evidently within the host, and which consume the host and spin their cocoon after the earthen cell is formed. The parasites commenced to emerge May 26 and continued until May 31. They were therefore in the ground 15 to 20 days. A few *Catolaccus incertus* were bred from the berries after the healthy larvae had entered the ground.

*Zygobaroides schwarzi* Pierce. On June 6, 1906, at Logansport, Louisiana, the writer took a number of adults on *Xanthoxylum*. Numerous egg punctures, but no larvae, were found.

The species of the genus *Barilepton* are semiaquatic (Schwarz 1888: 75).

#### Subfamily VI. Balanininae.

The species of *Balaninus* in the United States are all nut weevils, which enter the ground in the fall and pupate in the following spring.

8959. *Balaninus obtusus* Blanch. Confined in its attack to hazelnuts (Chittenden 1904:30).

8960. *B. uniformis* Lec. Attacks acorns of biennial oaks (Chittenden 1904:30).

8961. *B. nasicus* Say. Prefers acorns of annual fruiting oak (white and chestnut) (Chittenden 1904:30). Attacking acorns of *Quercus grisea* in Arizona (Packard 1890).

8962. *B. caryae* Horn. Attacks hickory and pecan (?) (Chittenden 1904:32).

8963. *B. rectus* Say. Attacks chinquapin and chestnut as a rule, and acorns in Arizona (Chittenden 1904:24-30).

8964. *B. quercus* Horn. Attacks *Quercus rubra*, and is confined to biennial fruiting oaks (Chittenden 1904:30). This species was bred by the writer from acorns of *Quercus rubra*, collected by C. R. Jones at Dallas, Texas, in 1905. Pupation took place in June, July, August, 1906. On July 28 found 17 larvae, 12 pupae, 2 teneral adults, and 9 adults in the ground. On August 18 found 4 larvae, 3 pupae, and 22 adults.

8965. *B. caryatrypes* Boh. Attacks chestnut (Packard 1890).

11213. *B. confusor* Horn. Attacks acorns of *Quercus nana ilicifolia*;

one stray example was bred from the Dipterous gall of *Acinia solidaginis* on *Solidago nemoralis* (Chittenden 1904:31).

*B. coccinea*. Bred from acorns (Felt 1903).

*B. proboscideus* Fab. Attacks chinquapin and chestnut (Chittenden 1904:26-28, 30).

*B. victoriensis* Chitt. Attacks acorns of *Quercus virginiana* (Sanderson 1904).

#### FAMILY VII. BRENTHIDAE.

##### Subfamily 1. Brenthinae.

###### Tribe 1. Arrhenodini.

8967. *Eupsalis minuta* Riley. The larvae burrow in the wood of oak lumber. Cause serious injury to white oak stave bolts in West Virginia (Hopkins 1898:47; 1902:60). Bores in white oak and sugar maple (Packard 1890:69, 389).

###### Tribe II. Brenthini.

##### Subfamily II. Cyladinae.

8966. *Cylas formicarius* Oliv. Bores in the roots of sweet potato (Comstock 1880:250).

#### FAMILY VIII. CALANDRIDAE.

##### Subfamily 1. Calandrinae.

###### Tribe I. Rhynchophorini.

8971. *Rhynchophorus cruentatus* Fabr. Attacks date palm at Fort Oden, Florida, and *Sabal palmetto* (Cabbage palmetto) at Atlanta, Georgia. The adults are very fond of the tops after they are bruised and give off a vinous odor. They may be trapped in this manner (Chittenden 1902a:25-28). The larvae bore in the soft, pulpy substance in the trunk and also in the roots.

8972. *R. palmarum* Linn. Very injurious to cocoanut palm in British Honduras. Bores in the trunks, following the ambrosia beetles (Chittenden 1902a:23-25).

###### Tribe II. Sphenophorini.

8973. *Scyphophorus acupunctatus* Gyll. Infests plants of the genus *Yucca* (Le Conte and Horn 1876:331).

8974. *S. robustior* Horn. Six specimens found in burrows in the extreme base of a dead *Yucca treculeana* trunk at Yucca Ridge, Texas, July 9. They had eaten lateral, horizontal burrows in several directions, so as to cut the trunk partly off (Townsend 1903:98).

8975. *S. yuccae* Horn. Infests plants of the genus *Yucca* (Le Conte and Horn 1876:331).

8977. *Cactophagus validus* Lec. Found exclusively upon decaying *Opuntia* leaves, the larvae no doubt living within the leaves or roots of the same plant (Riley 1888b:199).

8978. *Rhodobaenus tredecimpunctata* Ill. Breeds in the stems of *Oeno-*

*thera*, *Ambrosia*, *Xanthium strumarium*, and thistle (Beutenmüller 1890). Adult found feeding on half-ripe seeds of garden sunflower, also bred from larvae burrowing in the stalk (Webster 1903:94). Collected on *Quercus* May 23 and *Helianthus* May 28 at Gurley, Texas, by A. C. Morgan; on *Ambrosia psilostachya* at Dallas, Texas, and on cowpea July 6 at Rosser, Texas, by F. C. Bishopp. At Dallas, Texas, August 4, the writer found in the stem of *Xanthium commune* larvae, pupae and an adult. On August 15 only pupae and adults were found. On September 11 an adult was collected on this plant.

8984. *Sphenophorus ochreus* Lec. Breeds in the bulbous roots of *Scirpus atrovirens* (rush), and *Phragmites* (reed), in Indiana, the adults feeding upon the stems. When corn is planted in marsh land the first year this weevil does considerable injury by feeding on the stems and growing leaves (Webster 1890:52). Breeds in *Scirpus fluviatilis*. Adults feed on buds of *Phragmites communis*. Oviposition occurs July 20 to July 30.

8987. *S. pertinax* Oliv. Attacks corn. Breeds in the roots of *Typha latifolia*. Adults occur in July (Forbes 1890:58-74).

8988. *S. robustus* Horn. Breeds in the roots of corn. Occur in larval and pupal stages August 20 (Forbes 1890:58-74).

8990. *S. cariosus* Oliv. Breeds in roots of corn (Forbes 1890:58-74).

8993. *S. sculptilis* Uhl. Injures corn (Forbes 1890:58-74). Breeds in roots of timothy in West Virginia. The larvae can be found from June to September, and the pupae and adults from August to October. A liberal application of stable manure, tobacco dust, lime, or other suitable fertilizer to the sod immediately after hay harvest is recommended (Hopkins 1898:45).

8994. *S. scoparius* Horn. Injures corn (Forbes 1890:58-74).

8998. *S. placidus* Say. Injures corn (Forbes 1890:58-74).

9000. *S. parvulus* Gyllh. Breeds in the roots of blue grass (*Poa pratensis*). Is two-brooded, larvae being found in June and September (Bruner 1890:99). Breeds in the roots of timothy, rye, wheat, barley; injures corn. Hibernates as an adult; oviposits as late as July 1; larvae are found June 11 to July 21; pupae occur July 24; adults mature between August 11 to October 5 (Forbes 1890:58-74).

9005. *S. cultellatus* Horn. One specimen was collected on *Quercus* at Gurley, Texas, May 23, by A. C. Morgan.

*S. pontederiac* Chittn. Bred from roots of *Pontederia condata* by Koebele in August (Chittenden 1905:64).

*S. obscurus* Boisd. Breeds in sugar cane in Hawaii and occasionally does considerable damage (Chittenden 1902c).

### Tribe 3. Calandrinii.

9011. *Calandra oryzae* Fabr. Depredates stored rice, wheat, and Indian corn.

9013. *C. granaria* Fabr. Depredates stored wheat, corn, and rice.

Subfamily II. Rhiniinae.

9014. *Yuccaborus frontalis* Lec. Found under bark of *Yucca* (Le Conte and Horn 1876:334).

*Yuccaborus* sp. "This doubtless new species was taken in numbers in decaying trunks of *Yucca treculeana* at Yucca Ridges, Texas, July 9. Wickham took over two hundred from one trunk. They vary greatly in size. The small ones occurred near the bases of the trunks, which were standing upright, and the larger ones were found farther up. Only one or two larvae were found, and a few pupae, but there were hundreds of adults, all inside the trunks and not yet emerged. This, therefore, is the season of their appearance, as shown by the fact that few adults were beaten from the lower dead leaves of the yuccas and some found under yuccas logs" (Townsend 1903:99).

Subfamily III. Cossoninae.

Tribe 1. Dryophthorini.

9015. *Dryophthorus corticalis* Say. Under bark of dead *Pinus rigida* (Beutenmüller 1890).

9017. *Dryotribus mimeticus* Horn. Maritime; breeds in old boards and roots, washed up on beach (Riley 1888b:198).

9019. *Gononotus lutosus* Lec. Maritime; lives in larva and adult states in old boards and roots, washed up on bank (Riley 1888b:198).

Tribe 2. Cossonini.

9020. *Himatium errans* Lec. Inquillinous in the galleries of *Tomicus cacographus* under bark of yellow pine (Schwarz 1884:84).

9021. *H. conicum* Lec. Found under the bark of tulip tree, also under pine bark (Beutenmüller 1890).

9023. *Cossonus platalea* Say. Found in numbers under bark of a partly decayed poplar tree (Harrington 1885:19). Found under white walnut bark in Pennsylvania (Hamilton 1895).

9025. *C. piniphilus* Boh. }  
9026. *C. concinnus* Boh. } Live under pine bark (Ricksecker 1885:96).

9027. *C. corticola* Say. Found in abundance under bark of dead pine trees at Enterprise, Florida (Beutenmüller 1890).

9028. *C. crenatus* Horn. Lives under pine bark (Ricksecker 1885:96).

9031. *Macrancylus linearis* Lec. Abundant on sea shore at Haulover, Florida (Le Conte and Horn 1876:339). A colony of thirty or forty found by Schwarz under a log on the south end of Padre Island, Texas, June 8. Eleven taken under drift on Padre Island, June 29, Wickham, on the same date finding a colony of fifty on under side of wide, flat plank, being a piece of wreck of oak wood. The latter is a larger colony

than Wickham ever found on the Florida Keys. This genus lives only on the open coastline, not on lagoon coasts. It lives in colonies under driftwood, which must be pine (not oak) in Florida, or wood without bark and partly soft so that the larvae can breed in it. The weevils are found motionless and clinging to the wood when turned over, and occur in not too wet or too dry places. The genus is Antillean. The species is strictly maritime and semitropical (Townsend 1903:99).

9032. *Allomitus dubius* Horn. Lives under bark of dead and decaying wood or bores into decaying wood of deciduous or coniferous trees (Riley 1888b:198).

9033. *Stenomitus pallidus* Boh. Found attacking hickory in Pennsylvania (Hamilton 1895).

9034. *Caulophilus latinasus* Say. Lives under bark of dead and decaying wood or bores into decaying wood of deciduous or coniferous trees (Riley 1888b).

9035. *Mesites subcylindricus* Horn. Found on sea shore at Cape Henlopen, Delaware (Le Conte and Horn 1876:340).

Tribe 3. Rhyncolini.

9037. *Phloeophagus apionides* Horn. Lives in trunks of wild cherry (*Prunus serotina*) and ash (Beutenmüller 1890).

9038. *Ph. minor* Horn. Found on birch, willow, elm, ash (Beutenmüller 1890).

9039. *Wollastoniella quercicola* Boh. Lives in decaying wood of cottonwood (Knaus 1885:150).

9040. *Amaurorhinus nitens* Horn. Lives under bark of dead, decaying wood (Riley 1888b:198). One specimen beaten from *Clematis drummondii* tangles near Rocks Resaca, Texas, June 25 (Townsend 1903:99).

9042. *Elassoptes marinus* Horn. Maritime; lives in old boards and roots, washed up on beach (Riley 1888b:198).

9044. *Rhyncolus brunneus* Mann. Found in the wood of *Prunus serotina* (Beutenmüller 1890).

9046. *Rh. angularis* Lec. Infests willow bark (Packard 1890:599).

9048. *Stenoscelis brevis* Boh. Live under bark of dead and decaying wood (Riley 1888b:198). Taken from old maple and poplar stumps (Harrington 1885:19). Bred from denuded oak (Harrington 1891). Attacks Linden and red maple stumps (Packard 1890:381).

FAMILY IX. SCOLYTIDAE.

Subfamily I. Platypodinae.

The species of *Platypus* are known as "ambrosia beetles."

9051. *Platypus compositus* Say. The adults bore into the sapwood and sometimes into the heartwood of dying hardwoods and coniferous trees of numerous species (Hopkins 1904:15).



## Subfamily II. Scolytinae.

## Tribe 1. Tomicini.

9054. *Corthylus punctatissimus* Zimm. Attacks maple and huckleberry roots (Hamilton 1895). Bores in sugar maple (Packard 1890:389).

The species of *Pterocyclon* are called 'wood stainers.'

9055. *Pterocyclon fasciatus* Say. Injures oak and mahogany lumber (Hopkins 1904:45). Breeds in oak and apple (Hamilton 1895). Attacks bark of *Hicoria alba* (Packard 1890:328), and lives on beech trees (Packard 1890:520).

9058. *Pt. mali* Fitch. A small timber beetle first described from the apple, but attacking a great diversity of woods. It has proven very injurious to the wood of girdled cypress trees and sawed mahogany lumber (Hopkins 1904:45).

The species of this genus are known as "ambrosia beetles."

9060. *Gnathotrichus materiarius* Fitch. Excavates several branching galleries from a single entrance burrow, the broods living in short side chambers in sapwood and heartwood of pine and spruce in the eastern United States and Canada (Hopkins 1904:15).

*Gn. sulcatus* Lec. Excavates numerous branching galleries from a central burrow, the broods living in closely-joined side chambers in the sapwood and heartwood of western hemlock, Douglas spruce, giant arbor vitae, and grand fir in California and northern Washington (Hopkins 1904:15).

The species of *Pityophthorus* are known as "bark beetles."

9062. *Pityophthorus minutissimus* Zimm. Excavates two straight, transverse galleries from a central entrance burrow and elongate, longitudinal chamber in the bark and surface of wood branches, rarely in the thicker bark on the main trunk, of red oak (Hopkins 1904:24).

9063. *P. pubipennis* Lec. Excavates two transverse galleries from a central entrance burrow in the bark of California black oak and Oregon white oak (Hopkins 1904:16).

9068. *P. sparsus* Lec. Attacks white pine (Packard 1890:720).

9071. *P. cariniceps* Lec. Excavates many short, radiating, curved galleries from a large, central chamber in the bark and surface of the wood of twigs and branches of dying trees and main stem of young, dying red spruce (Hopkins 1904:24).

9073. *P. confinis* Lec. Excavates a large central chamber and several radiating primary galleries, with very deep egg cavities, in living bark of western pine (Hopkins 1904:16).

9074. *P. nitidulus* Mann. Excavates three or four radiating galleries from a medium-sized central chamber in bark of Sitka spruce, mountain pine, shore pine, and Douglas spruce (Hopkins 1904:17).

9079. *P. puncticollis* Lec. Excavates small, radiating, curved galleries from a large central chamber in twigs and branches of Monterey pine, shore pine, western yellow pine, knobcone pine, Sitka spruce, and mountain or silver pine (Hopkins 1904).

9082. *P. puberulus* Lec. Attacks pine twigs (Hamilton 1895).

11244. *P. querciperda* Schwarz. Attacks oak (Packard 1890:93).

The species of *Pityogenes* are known as "wood engravers."

9065. *Pityogenes carinulatus* Lec. Excavates numerous radiating galleries from a large central chamber in living bark and surface of wood of western yellow pine and Jeffrey pine (Hopkins 1904:17).

9088. *Hypothenemus eruditus* Westw. Attacking shells of foreign nuts (Hamilton 1895).

9089. *H. erectus* Lec. Many specimens of this species were bred from dead fig twigs, issuing all the time from March 12 to June 14, breeds in hickory and oak in New Jersey (Townsend 1903:99).

9090. *H. dissimilis* Zimm. Bred with the preceding from dead fig twigs, but in less numbers. Breeds in grape and oak in New Jersey (Townsend 1903:99). Boring in wild cherry (Hamilton 1895).

The species of *Trypodendron* are known as "ambrosia beetles."

9093. *Trypodendron bivittatus* Kirby. Excavates several branching galleries from a single entrance burrow, the brood developing in short side chambers in the sapwood of spruce, pine, hemlock, cedar, fir, and larch (Hopkins 1904:16).

9095. *Xyloterus politus* Say. Bores in elm (Hamilton 1895).

The species of *Xyleborus* are also known as "ambrosia beetles."

9105. *Xyleborus obesus* Lec. Bores in live beech (Packard 1890:520).

9106. *X. celsus* Eich. The adults excavate long, branching galleries in dying trees and logs of hickory. Bores in oak bark (Packard 1890:92).

9107. *X. fuscatus* Eich. Bores in oak bark (Packard 1890:93).

9108. *X. retusicollis* Zimm. Bores in oak bark (Packard 1890:93).

9111. *X. pubescens* Zimm. Under pine bark (Hamilton 1895).

9112. *X. caelatus* Eich. Under pine bark (Hamilton 1895).

*X. sareseni* Ratz. Excavates branching galleries and broad brood-chambers from an entrance burrow in sapwood and heartwood of Douglas spruce in Oregon, red oak in Maine, apple and hemlock in West Virginia, and oak, beech, maple, lime, poplar, pine, spruce, and fruit trees in Europe.

*Cryphalus* sp. n. Excavates broad, irregular chambers in bark of grand fir (Hopkins 1904:16).

9116. *Dryocoetes antographus* Ratz. Under bark of dead *Abies excelsa* in West Virginia and parasitized by *Spathius canadensis* Ashm.

9117. *D. affaber* Mannh. Under bark of *Abies menziesii* (Packard 1890:857). Bores in terminal shoots of white pine, and cones of red pine.

9122. *Tomicus calligraphus* Germ. Attacks bark of pitch pine (Packard 1890:711).

9123. *T. cacographus* Lec. Breeds under bark of *Pinus palustris* in Florida, and *Pinus inops* in Maryland (Schwarz 1894).

9124. *T. confusus* Lec. Excavates one to three long, longitudinal galleries from a medium-sized, central chamber in the living bark of yellow pine (Hopkins 1904:18).

9128. *T. pini* Say. Attacks bark of *Abies menziesii* (Packard 1890:858).

9133. *T. avulsus* Eich. Attacks pine; especially common as a secondary enemy in company with *Dendroctonus frontalis* Zimm. (Hopkins 1904).

9134. *T. latidens* Lec. Excavates two or three longitudinal galleries from a small, central chamber in living bark of branches of sugar pine (Hopkins 1904:17).

9135. *T. balsameus* Lec. Excavates several radiating, curved, transverse galleries from a small, central chamber in the living and dying bark of balsam fir and red and black spruce (Hopkins 1904:25).

*T. concinnus* Mann. Excavates irregular, central chambers, and three or four short, curved galleries in partly-living bark of Monterey pine, shore pine, and Sitka spruce (Hopkins 1904:17).

*T. integer* Eich. Excavates several longitudinal, primary galleries from a large, central chamber in living bark of western yellow pine and lodgepole pine (Hopkins 1904:18).

*T. oregoni* Eich. Excavates two or three longitudinal galleries from a small, central chamber in the bark of western yellow pine, lodgepole pine, and silver pine (Hopkins 1904:17).

9136. *Micractus suturalis* Lec. Breeds in hickory and locust (Hamilton 1895).

9141. *M. rudis* Lec. Breeds in hickory (Hamilton 1895).

#### Tribe 2. Scolytini.

9144. *Scolytus quadrispinosus* Say. Attacks hickory (Hopkins 1904:41). Attacks bark of bitternut, shell-bark, and pig-nut hickory. Parasitized by *Spathius trifasciatus* Riley and *Bracon scolytivorus* Cr. (Packard 1890:294).

9145. *S. fagi* Walsh. Attacks bark of *Celtis texana* (Packard 1890:611, 860).

9146. *S. unispinosus* Lec. Excavates two short, straight, longitudinal galleries from an entrance burrow in living bark of Douglas spruce and western larch (Hopkins 1904:20).

9148. *S. muticus* Say. Attacks *Celtus* (Packard 1890:860).
9149. *S. praeceps* Lec. Excavates two nearly straight, transverse galleries from a central entrance burrow and basal cavity in living bark and surface of wood of California white fir (Hopkins 1904).
9150. *S. subscaber* Lec. Excavates two long, nearly-straight, transverse galleries from a central entrance burrow and central or side cavity, in bark of grand fir, California white fir (Hopkins 1904:21).
9153. *S. rugulosus* Ratz. Bores peach, plum (Hamilton 1895). Breeds in pear trees (Packard 1890:860).
9154. *Chramesus icoriae* Lec. Breeds in hickory limbs (Hamilton 1895).
9157. *Polygraphus rufipennis* Kirby. Excavates three or four short, curved, egg galleries from a large, central chamber in the surface of the inner bark, through the bark and slightly grooving the wood of black, red and white spruce, and rare in balsam fir (Hopkins 1904:25).
9159. *Phloeotribus liminaris* Harris. Attacks *Prunus serotina* (Packard 1890:530).
9163. *Hylesinus aculeatus* Say. Excavates two long, transverse galleries from a central entrance burrow and side cavity in the living bark of ash (Hopkins 1904:20).
9165. *H. sericeus* Mann. Excavates one short, longitudinal gallery from the entrance burrow and small, side cavity in living bark of shore pine (Hopkins 1904:20).
9166. *H. opaculus* Lec. Attacks bark of elm and ash (Packard 1890:544).
9167. *H. aspericollis* Lec. Excavates a moderately-long, longitudinal gallery from a basal entrance burrow in the bark of white alder (Hopkins 1904:20).
- H. granulatus* Lec. Excavates one or two transverse galleries from a central burrow in the bark and surface of wood near the base of dying grand fir (Hopkins 1904:19).
- H. nebulosus* Lec. Excavates two short, straight, longitudinal galleries from a central entrance burrow in the living bark of Douglas spruce (Hopkins 1904:20).
9158. *Cnesinus strigicollis* Lec. Attacks osage orange (Hamilton 1895).
9171. *Phloeosinus dentatus* Say. Excavates a single, short, longitudinal, egg gallery from the entrance burrow and basal chamber in the bark and surface of wood of juniper and eastern arborvitae (Hopkins 1904:25). In cedar, parasitized by *Spathius abdominalis* Riley at Salina, Kansas, May 23, 1885 (Riley and Howard 1890a:350).
9172. *Phl. punctatus* Lec. Excavates a single, straight, longitudinal or curved, subtransverse gallery from a basal chamber in the living bark and surface of wood of giant arborvitae, incense cedar, and Port Orford cedar (Hopkins 1904:18).

9174. *Phl. graniger* Chap. Breeding under the bark of *Juniperus virginiana* in West Virginia and parasitized by *Spathius canadensis* Ashm. (Hopkins 1892:258).

*Phl. cupressae* Hopk. Attacks transplanted Lawson and Monterey cypress in California; also attacks redwood (Hopkins 1904:41).

*Phl. sequoiae* Hopk. Excavates a long, straight, longitudinal gallery from a basal chamber in living bark of redwood and giant arborvitae (Hopkins 1904).

9177. *Carphoborus bifurcus* Eich. Attacks southern pine (Packard 1890:725).

9178. *C. bicristatus* Chap. Attacks pine. (Packard 1890:726).

9179. *Dendroctonus terebrans* Oliv. Attacks pine (Hamilton 1895). Attacks *Abies* (Packard 1890:858).

9183. *D. simplex* Lec. Attacks larch (Harrington 1891).

9184. *D. brevicornis* Lec. Excavates long, winding galleries through the bark of western yellow pine and sugar pine (Hopkins 1904:18).

9185. *D. frontalis* Zimm. Attacks healthy pine and spruce in Southern States (Hopkins 1904:41).

*D. approximatus* Dietz. Attacks western yellow pine (Hopkins 1904:44).

*D. piceaperda* Hopk. Excavates long, longitudinal, egg galleries from a basal entrance burrow in the bark, and grooving the wood of red and white spruce trees (Hopkins 1904:26).

*D. ponderosae* Hopk. Attacks healthy pine and spruce. The adult beetles excavate characteristic galleries, in which they deposit their eggs along the side, and the larvae developing from them mine the inner bark (Hopkins 1904:41).

*D. valens* Lec. Excavates very long and broad primary galleries, the broods developing in broad, side chambers in the bark of yellow pine and lodgepole pine (Hopkins 1904:19).

9186. *Crypturgus atomus* Lec. Enters the galleries of other bark-beetles, from which it excavates numerous, very small, irregular galleries through the inner bark of black and red spruce and white pine (Hopkins 1904:26).

11254. *C. alutaceus* Schwarz. Under bark of *Pinus palustris* and *Pinus inops*, with its galleries always arising from the galleries of *Tomicus caco-graphus* Lec. (Schwarz 1894).

9187. *Dolurgus pumilus* Mann. Excavates irregular, confused galleries in dying and dead bark of Sitka spruce (Hopkins 1904:18).

9116. *Hylastes tenuis* Zimm. Attacks pine (Hamilton 1895).

9199. *Hylurgops pinifex* Fitch. Attacks white pine (Packard 1890).

9200. *H. rugipennis* Mann. Excavates a short, curved, longitudinal

and subtransverse gallery from an entrance in the living bark of Sitka spruce and shore pine (Hopkins 1904).

9201. *H. subcostulatus* Mann. Excavates short, slightly-curved, longitudinal galleries in the living bark of sugar pine, western white pine, western yellow pine, and lodgepole pine (Hopkins 1904:19).

FAMILY X. ANTHRIBIDAE.

Tribe 1. Basitropini.

9213. *Eusphyrus walshii* Lec. Two specimens bred from dead fig twigs March 19 and 25 (Townsend 1903:99).

9221. *Cratoparis lunatus* Fahr. Lives in fungus found on dead oak (Beutenmüller 1890). On June 7, 1906, the writer found numerous specimens feeding on a white fungus covering the base of a water oak at Logansport, Louisiana.

9223. *Brachytarsus alternatus* Say. Bred from the fungus *Cystopus ipomoea-panduranae* on *Ipomoea pandurata* in Ohio (Webster and Mally 1898). Bred one specimen from the stem of *Elymus virginicus* at Champaign, Illinois (Webster 1903). This species was bred by the writer in abundance from the stems of *Sideranthus rubiginosus* at Dallas, Texas. The eggs are laid in the tender lateral stem buds and at the base of the flower heads, the larvae feeding in narrowly separated cells and pupating in cells of brown dust. *Torymus anthonomi* Cwfd. is a primary parasite.

9225. *Br. limbatus* Say. Bred by Mr. Schwarz from flower heads of *Helenium tenuifolium* (Beutenmüller 1890).

9228. *Br. tomentosus* Say. Occurs on *Ambrosia artemesiaefolia* (Hamilton 1895).

9229. *Br. variegatus* Say. Bred by Mr. Schwarz from the smut of corn (Beutenmüller 1890).

Tribe 2. Araeocerini.

9231. *Araeocerus fasciculatus* Woll. Breeds in the St. Ignatius bean (*Strychninos ignatii*) in the Philippines (Brown 1906). This species has many host plants.

9233. *Choragus sayi* Lec. Found in twigs of dead beech trees which were injured by fungus (Beutenmüller 1890).

Tribe 3. Xenorchestini.

9237. *Euxenus punctatus* Lec. Found on dry palmetto leaves in Florida (Schwarz 1884).

THE PUPAE OF THE ANTHONOMINI. (Plates V-VIII.)

The writer has been able to study well preserved pupae of seven species of the genus *Anthonomus sens latus* and two other species, not well preserved. The result of this study is that all nine of these species can be readily separated, as proven by a test in which eight pupae, representing

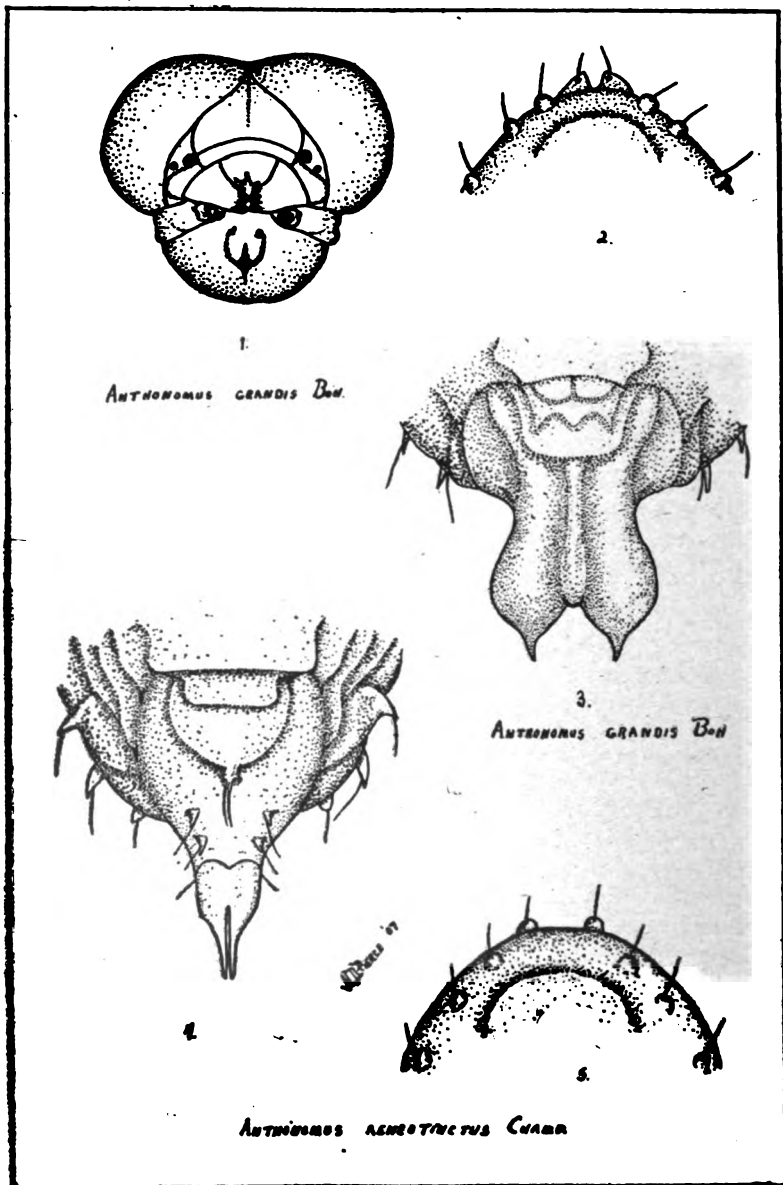


PLATE V.

seven species, were placed in a common receptacle, and were identified from the drawings reproduced herewith, by Messrs. E. A. Schwarz, E. S. Titus, J. C. Crawford, and H. S. Barber, without difficulty.

The Anthonomini examined may be known in the pupal stage by the prolongation of the tenth dorsal segment, and its differentiation into a hard, chitinous, imperishable process, either pointed, cleft, or truncate-emarginate; by the presence of a pair of approximate tubercles on the pronotum, more prominent than the other prothoracic tubercles and generally easily seen from below; and by the shortening and indistinctness of the last four or five ventral abdominal segments.

In the search for other hosts of the common boll weevil parasites there have arisen many instances when it was desirable to know the genus of a larva or pupa of some unknown weevil with a newly-discovered breeding habit. The present paper is to serve as an introduction to a series of papers considering the characters of the immature stages of the weevils bred in this interesting study. The writer now has in his possession immature stages of a large number of species, all of which will be studied and figured as time permits.

The most distinct of all the pupae is that of *Anthonomus grandis*, in which the apical process is very large and prominent, apically bilobed with each lobe acute, having the sides inflated at middle, and the apical emargination from one-third to one-half of length of process; medianly prominently ridged from last ventral to apex of emargination, each lobe longitudinally inflated. The tubercles of the prothorax are convex with exception of the large median anterior pair which are more or less triangular and much closer together than their own breadth. (Plate V, Figs. 1 to 3).

The pupa of *Anthonomus squamosus* in many respects resembles that of *A. grandis*. The process is broad, but considerably less produced, ventrally convex with a median concavity, apically emarginate; emargination varying from quadrate to ogival. The prothoracic tubercles are insignificant except the median anterior pair, which are quadrate and generally with a spine at each angle, and separated by about their breadth. (Plate VI.)

In both of these species the abdominal tubercles are laterally spined, but not numerous. Differing from them in the large number of abdominal tubercles, *Anthonomus fulvus* seems nevertheless to be quite close to *A. squamosus*. The process is broad and broadly, roundly, quadrately emarginate. The two principal prothoracic tubercles are large, quadrately-rounded, unispinor and separated by less than their breadth. (Plate VII, Figs. 1, 2, 4.)

Although these three species have a similar abdominal structure, even in the last four ventral segments, *A. grandis* and *A. squamosus* are placed in separate and distinct groups in the genus *Anthonomus* and *A. fulvus* is placed in the subgenus *Anthonomorphus*.

In the second group the pupae have the anal process narrowly cleft.



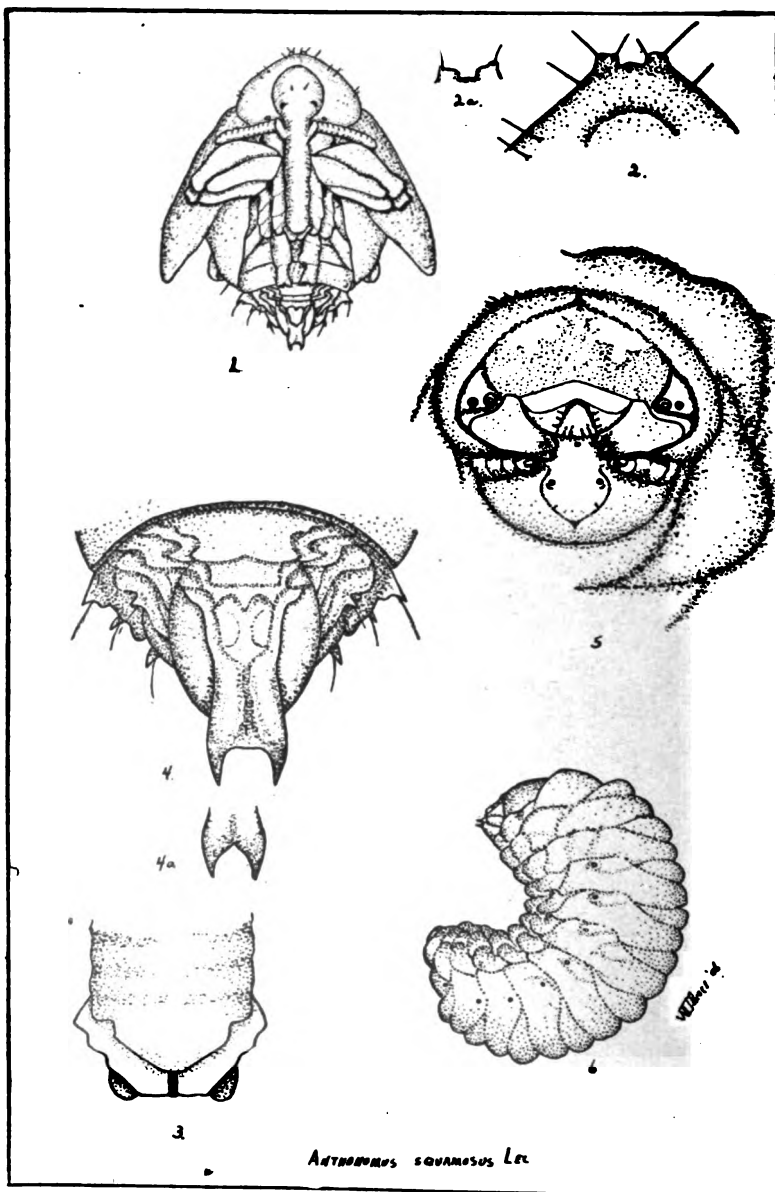


PLATE VI.

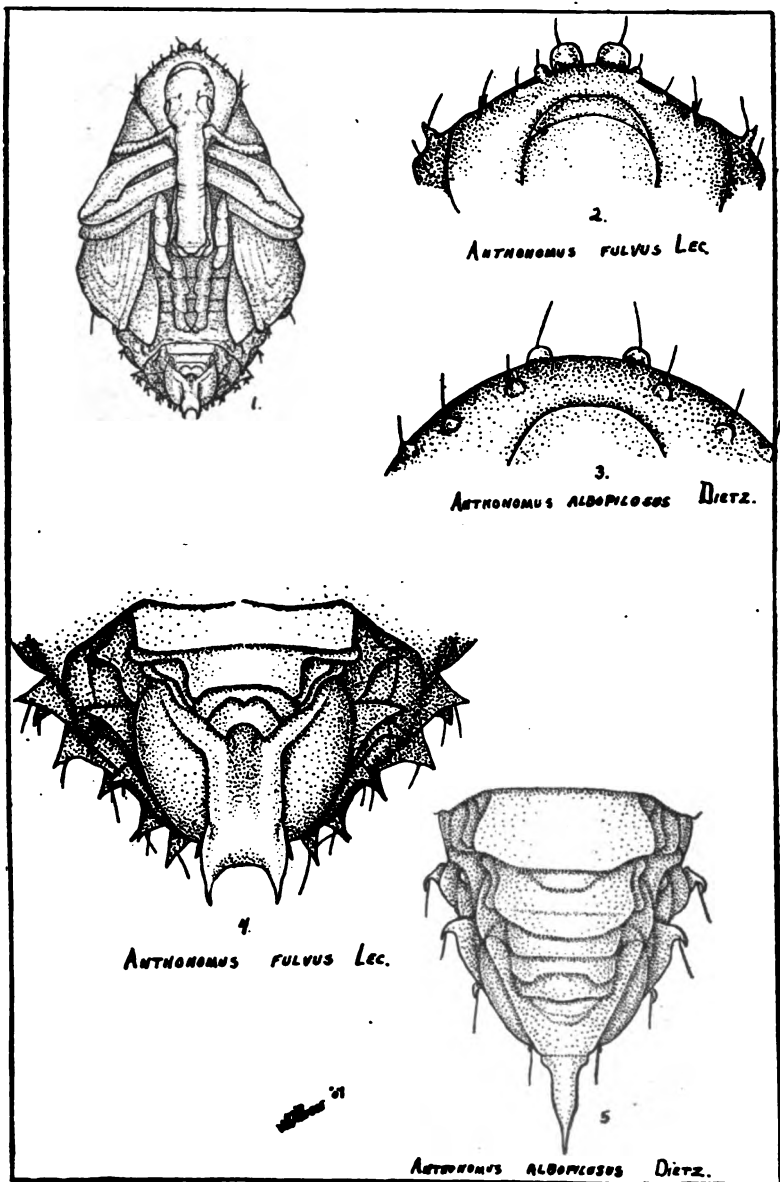


PLATE VII.

The pupae of *Anthonomus aeneolus* have an elongate, narrow process, with a deep cleavage, which does not approach the preceding dorsal segment, and with the tips of the lobes slightly diverging. The prothoracic tubercles are all rounded, with the large, median pair separated by about their breadth. (Plate VIII, Figs. 5, 6.)

The pupae of *Anthonomus nigrinus* are very similar to those of the preceding species, but readily separated by having the anal process more robust, with the cleavage almost reaching the preceding dorsal segment, and the tips more divergent. The two anterior median pairs of prothoracic tubercles are without spine, the larger being more than their breadth apart. These two species have like habits and belong in the classification. (Plate VIII, Figs. 3, 4.)

The pupae of *Anthonomus aeneotinctus* are distinguished by a very elongate process, laterally sinuate, basally broad, apically truncate and narrowly-deeply cleft, with the apices of the lobes not divergent. The last ventral segment is medianly-apically lobed, the lobe bispinose. Two pairs of tubercles occur on the ventral side of the last dorsal segment. All of the prothoracic tubercles are convex. (Plate V, Figs. 4, 5.)

An imperfect specimen of *Anthonomus flavicornis* was studied and proved to have a prominent anal process, inflated at middle, and apically, with two elongate parallel lobes separated by a narrow cleavage. (Plate VIII, Fig. 2.)

The third type of pupae has an elongate, uncleft, attenuate process. The pupae of *Anthonomus albopilosus* have this anal process very long, awl shaped. The prothoracic tubercles are all convex and none medianly approximate (Plate VII, Figs. 3, 5). An imperfect specimen of *Tachypterus quadrigibbus* has the exposed portion of the process funnel-shaped. The abdomen of this species is very tuberculate. (Plate VIII, Fig. 1.)

Of the pupae which were fully studied those of *Anthonomus albopilosus* had the beak extending almost to the tip of the posterior tarsi, while in the others it only reached to the tip of the anterior tarsi.

As this paper is only preliminary, no attempt has been made to characterize less obvious characters.

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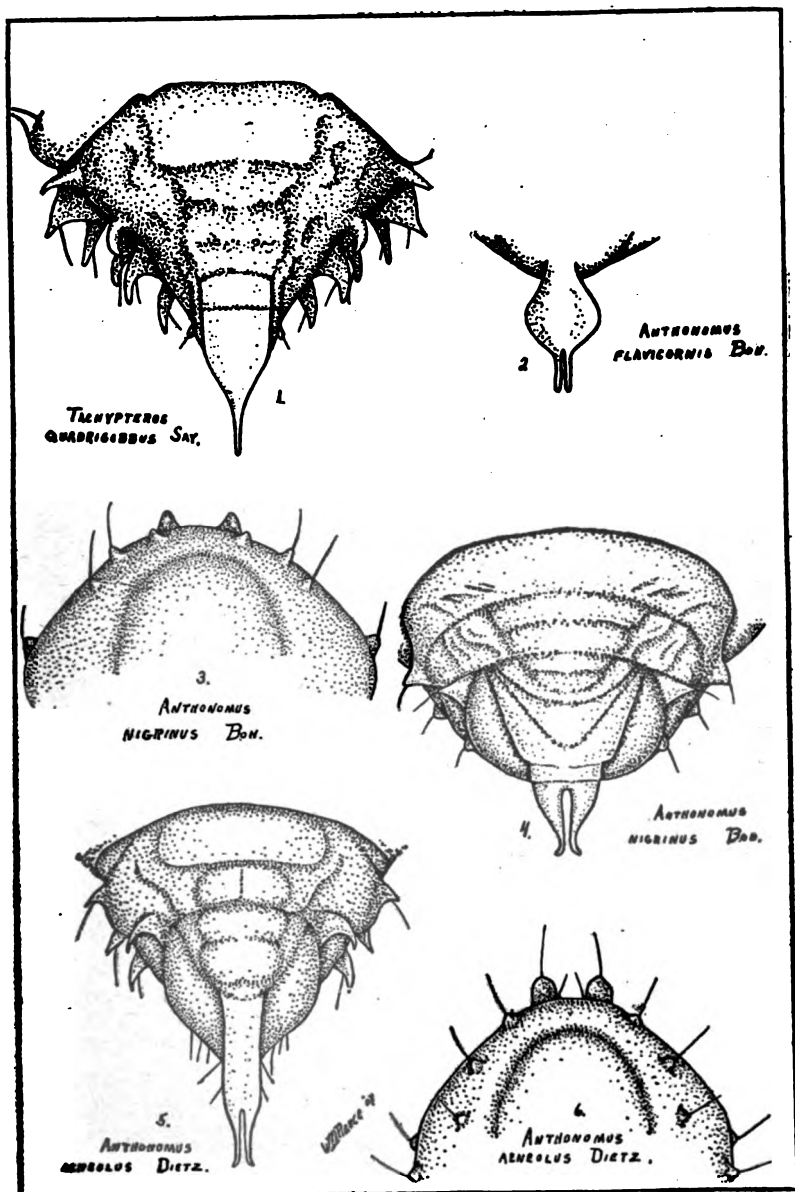


PLATE VIII.

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DESCRIPTION OF PLATES.

Plates I-IV, from photos by W. E. Hinds.

Plate I.

- Fig. 1. Stem of *Ambrosia psikostachya*, cut to show eggs of *Lixus scrobicollis*.
- Fig. 2. Same, showing egg punctures.
- Fig. 3. *Lixus scrobicollis* Boh.
- Fig. 4. Gall of *Lixus musculus* on stem of *Polygonum pennsylvanicum*.

Plate II.

- Fig. 1. Galls of *Smicronyx tychoides* in stems of *Cuscuta*.
- Fig. 2. Larva of *Desmoris scapalis* in head of *Sideranthus rubiginosus*.
- Fig. 3. Pupa of *Anthonomus grandis*.
- Fig. 4. Pupa of *Orthoris crotchii*, parasitized by *Tetrastichus*.
- Fig. 5. Pepper showing larva of *Anthonomus aeneotinctus*.
- Fig. 6. Section of cotton square showing pupa of *Catolaccus incertus* and pupa of its host, *Anthonomus grandis*.

Plate III.

- Fig. 1. *Anthonomus grandis* Boh.
- Fig. 2. *Desmoris scapalis* Lec.
- Fig. 3. *Achrastenus griseus* Horn.
- Fig. 4. *Ectatomma tuberculata*, an enemy of *Anthonomus grandis*.
- Fig. 5. An injured flower of *Callirrhoe involucrata*, with larva of *Anthonomus fulvus*.
- Fig. 6. *Anthonomus fulvus* Lec.
- Fig. 7. Injured bud of *Callirrhoe involucrata*, containing larva of *A. fulvus*.
- Fig. 8. Cotton square with larva of *Anthonomus grandis*.
- Fig. 9. Pepper containing larvae of *Anthonomus aeneotinctus*.
- Fig. 10. Peach containing larvae of *Conotrachelus nenuphar*.

Plate IV.

- Figs. 1, 6, 7. Pupa of *Acalles nobilis* in leaf of *Opuntia*.
- Figs. 2-5. Cells of *Acalles nobilis*.
- Fig. 8. Leaf of *Opuntia* showing cells of *Acalles nobilis*.
- Fig. 9. Larva and pupa of *Balaninus quercus* in earthen cells.
- Fig. 10. Sweet potato injured by *Cylas formicarius*.

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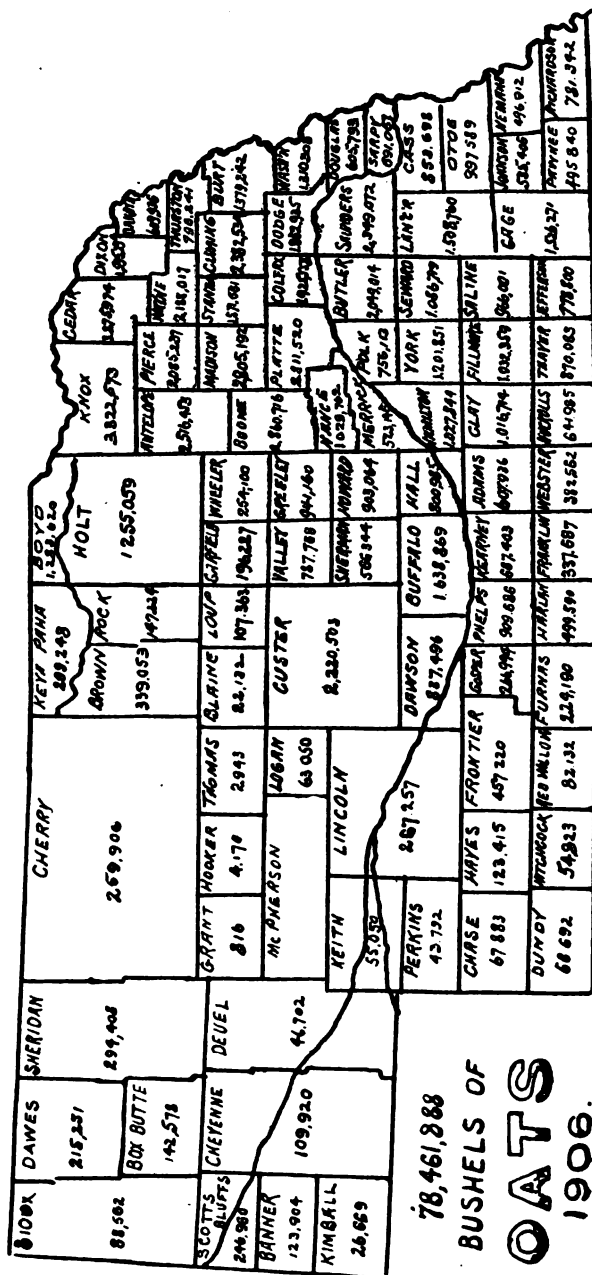
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**PRELIMINARY REPORT ON THE AGRICUL-  
TURAL GEOLOGY OF NEBRASKA.**

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**BY G. E. CONDRA AND ALVIN KEYSER.**

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## PRELIMINARY REPORT ON THE AGRICULTURAL GEOLOGY OF NEBRASKA.

BY G. E. CONDRA AND ALVIN KEYSER, UNIVERSITY OF NEBRASKA.

This paper is an incomplete report given in response to a strong demand from farmers for data of this kind.

The following is an example of many letters which are received at the University from citizens of Nebraska and other states:

PLATTE, S. DAKOTA, March 6, 1907.

*Chancellor E. B. Andrews, Lincoln, Nebraska.*

DEAR SIR: Can you supply me with a map showing elevations and general character of Western Nebraska?

If you cannot, will you kindly inform me where I may obtain this information?

I enclose stamp for reply.

Yours very truly,

WM. J. JOHNSON.

This letter was referred to one of the writers for reply. The Departments of Geology and Geography receive fully 2000 of such inquiries a year. Similar letters to the number of 1,500 are received by the Department of Soils. Our paper, which in a way only supplements various articles by Prof. E. H. Barbour, may serve to meet the demands, awaiting fuller reports.

As the State and National Geological and Soil Surveys have projected their field studies in Nebraska, more and more information of special interest to farmers has been gathered. The writers while connected with these surveys and teaching in the University of Nebraska have found opportunity to study the geography and geology of the state. As a result of this experience and an examination of the literature of various departments, both agricultural and geological, this paper is written.

### GEOGRAPHY AND GEOLOGY.

All that we hope to accomplish in this short article is to merely outline the physiographic conditions which are of most importance in agriculture. We give little more than a bird's-eye view of the subject, hoping to thereby enlist the cooperation of persons who are interested in this kind of research.

A complete survey of this kind should consider rather fully the climate, structure, topography, drainage, ground water, rock formations and their soils; the soil regions, and a summary of agricultural conditions. The gathering of such data and the preparation of suitable maps and reports will require the united effort of several persons and a great deal of time in the field and laboratory.\*

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\* Professor Condra is studying the geography and geology and Professor Keyser the soils.

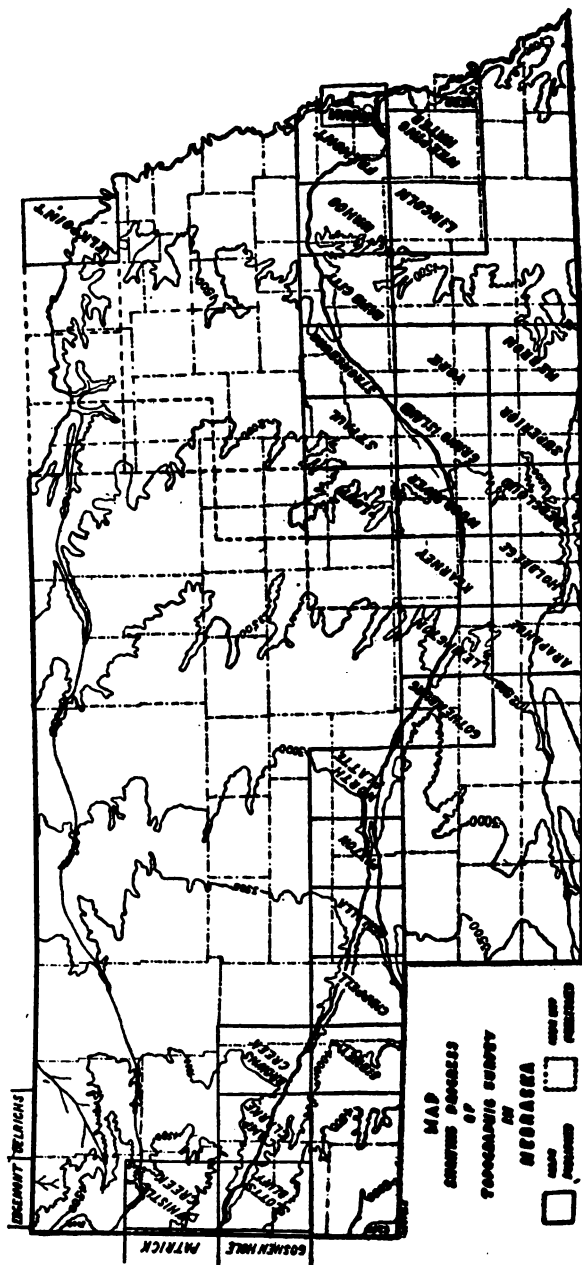


FIGURE 1.

regions, the Loess, Sand Hill, High Plains and Bad Lands.† Hills, dunes and buttes are the extreme land forms in different regions.

Other things being equal the most desirable land is that which is called smooth or level. It should have grade enough for drainage but not be so badly broken as to interfere with cultivation and travel. We need not go far to learn how important a factor topography is in land values.

The United States Geological Survey has mapped about 40 per cent of Nebraska. The maps or sheets, as they are called, are rectangular in form and of two sizes, large and small, costing the public ten cents and five cents each. Figure 1 shows how much of the state has been topographically surveyed, and gives the names of sheets. These maps, made at large expense to the government, are both accurate and cheap. It is hoped that citizens may become more and more interested in really good maps such as these. The maps show relief, drainage and cultural features by symbols which are easily understood.

*Drainage.*—The state's natural drainage is quite well defined, yet there are places without surface drainage. The course of the largest rivers, from west to east, is determined by the eastward slope.

Surface drainage on rough land is rapid; that of smooth land slow and at places imperfect. Water collects in small basins on poorly drained land, forming either permanent or intermittent ponds and lakes. Such places occur in the Sand Hill Region (Figure 3) and at many points on the uplands and bottom lands. It is generally believed that smooth land has less run-off than rougher topographies in the same locality. If this is true, our broad acres of so-called level land are a factor in holding back surface water.

Soil structure and texture affect drainage. Open textured soils drain more readily than clay soils. Loose textured soils absorb a rainfall rapidly, passing the water to underground drainage. In this respect these soils may be regarded as important factors in producing a small direct run-off. The volume of the state's run-off is not yet known; neither is the amount known for each soil region and soil type. We refer now to the relative volume in its relation to the rainfall. Only one conclusion is safely reached, i. e., that the state's direct run-off is small in proportion to the rainfall, most of the water finding its way into the ground and underground drainage. Underflow in the larger valleys has considerable importance and there is a very slow underground drainage in the uplands, the direction being, in general, the same as that of the surface slope.

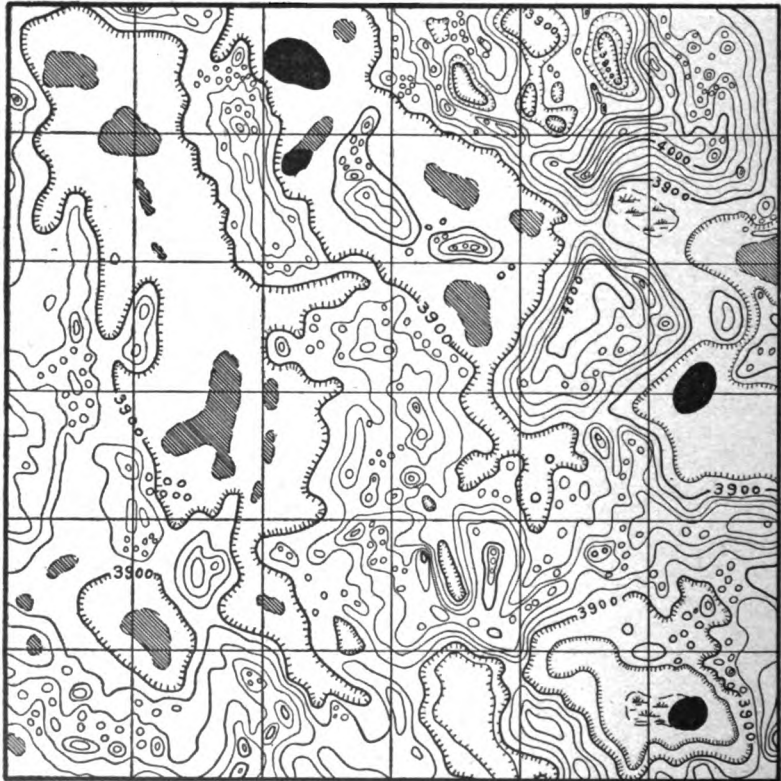
It is becoming necessary for geographers and geologists to study the phenomena and life history of rivers. Each river has its history and habits. It is a creature of environment, being a resultant of many conditions, but most noticeably affected by rainfall and evaporation. Its

\* Barbour, Vol. 1, Nebraska Geological Survey.

† Condra, Geography of Nebraska, pp. 72-114.

valley may be old or new, large or small, deepening or filling. Rivers both make and fill valleys; they make and destroy land. In fact both processes go on all the time in a valley, but at different places. Aggradations or building up by streams give shallow channels, low banks and broad valley bottoms free from benches. For example, the Platte is now

### **SAND HILL DRAINAGE & TOPOGRAPHY**



**LOCATION- T.22N., R.46W. AREA-36 SQUARE MILES**

**FIGURE 3.**

elevating much of its bed in this way. Its bottom land lying only a little above the river level is easily flooded. Local drainage on this alluvial land is with the slope of the valley-bottom rather than directly to the river. The Republican river throughout most of its course in Nebraska,

is deepening its valley. This process is producing well-drained benches which stand out prominently in both sides of the valley.

Is too much of Nebraska used solely for drainage purposes? The usual answers to this question are yes and no. However, we are inclined to accept the affirmative. Our state has drainage problems, the solution of which will result in increasing the state's agricultural resources. It will mean artificial drainage at places in both the humid and subhumid regions. In all, fully two per cent. or more of the state may be improved in this way, using open ditch, tile and well drainage.\* The demand for removing a rainfall is not the same everywhere. If needed, water should be conserved; if not, it should be drained off.

Run-off water has agricultural relations. It is used for stock water, power and irrigation. Also, it does great damage to soils and crops by wash, overflow, scour and undermining. The results of these devastating processes are well known. That they may and should be controlled in at least some measure seems very probable.

Drainage, then, is an agricultural condition of varied importance and relations. In most dry regions smooth lands are held at a premium as they are thought to cause a large "soak-in" and small immediate run-off. However, we find nearly level lands in these regions which are of little value on account of their imperfect drainage. Water drains on to them from larger areas and evaporates, leaving alkali in the soil.

Before passing this point, let us say that the rain gauge is not the only check on agricultural possibilities. It shows only the amount of rainfall and does not necessarily determine the volume of available crop water. It is becoming necessary for hydrographers to devise means for determining the run-off, not of drainage basins alone, but of the different topographies and soil types. A yet larger problem is to be solved mainly by the farmers themselves. It is that of controlling moisture by tillage, using methods suited to the rainfall, low or high as it may be. The problem in most of Nebraska is the conservation of moisture below a dry air. It involves a battle against run-off and evaporation.

*Ground Water.*—At varying distances below the surface the ground is completely filled or saturated with water. The top of the saturated zone is variously called the water level, water table, water line and water plane. Above the water-filled ground is capillary water. All are familiar with the fact that most of the ground water comes from rain which soaks into the soil, percolating downward to water level. This means of course that the amount of water in underground storage varies with wet and dry periods, a fact which is generally known. Certain bottom lands become marshy and decrease in value with a rise of the water-level to near the surface. Drainage must be employed at such places to reclaim the land. Alfalfa does best with a water table at a depth of between eight and fifteen feet. This crop draws water from depths of twenty-five feet or more, but usually has a hard struggle where the

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\* Slichter & Wolff, Water Supply Paper 184. U. S. Geol. Survey.



water table rises permanently closer than two or three feet of the surface.

Ground water is the source of well, spring, and most crop water. Its quality, quantity and accessibility are important factors from the standpoint of agriculture.\* In quality, water is soft, medium hard, hard, saline, alkaline, etc. As to the quantity of water they supply, wells are dry, weak and strong. Shallow wells in Nebraska vary from about ten to over three hundred feet in depth, or with distance to the saturated zone of ground water. Where the water table is quite deep land is usually cheaper than it is where the distance is one hundred feet or less. The well water of our state, though generally of a desirable and healthful kind, varies more in quantity and quality at different places than is usually known. Its character affects the public health and land values, hence its presence in desirable quantities suitable for stock and for domestic purposes is a valuable consideration.

Springs, of which there are many in the state, have economic importance, supplying all the water for domestic purposes and for stock on many farms. They feed streams, especially those heading in sandy formations overlying impervious beds.

That ground water has important relations in the economics of a country is evinced by the importance given it by the United States Geological Survey. About one-third of Nebraska has been surveyed by that department. Water Supply Papers published by the U. S. Geological Survey should have a place in every farmer's library.

*Soil.*—Soil is weathered or rotted rock which contains humus. There are two general uses of the term soil. In a loose way it stands for any and all mantle rock. As used by the Bureau of Soils, U. S. Department of Agriculture, it denotes the humus stained portion of weathered rock. Below the soil is subsoil and then bed rock.

The four principal physical ingredients of soil are humus, clay, silt and sand, the proportion and condition of each varying in different soil types. Sand is composed of various sizes and kinds of grains representing a variety of minerals and rocks. Clay is very much finer textured. It contains as its base, kaoline, a residual material formed by the decay of feldspars and other silicate minerals. Humus is a dark colored plant remnant formed by organic decay. Plant food materials are produced from minerals and rocks by weathering processes. Generally speaking, fine textured soils contain the more available plant food materials.

This brief review is given for the purpose of calling attention to soil classification. One basis of classification is origin; another, texture. The Bureau of Soils emphasizes texture, but not to the full neglect of other properties. Mechanical analysis is used as a basis of classification. The per cent. of organic matter, gravel, coarse sand, medium sand, fine sand, very fine sand, silt and clay is determined both for the soil and the subsoil. Besides the mechanical analysis, color, origin, structure, depth,

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\* Condra, Water Supply Paper 216, U. S. Geol. Survey.

The task is by no means completed, yet a fairly accurate notion of the various formations is now at hand, and the results of this long effort are becoming of practical value to farmers, in answer to many questions concerning soils, artesian water, and mineral resources.\*

The structure bears direct relations to the mineral resources, topography, quality of ground water and soils. Though not imperative it is of importance that citizens should know the substructure of the land. Everywhere in the state the mantle rock (soil and subsoil) is underlaid by stone in position. We mean by this, that beds of rock, called strata, lie below the subsoil. They outcrop in most valleys, at which places we may observe and study them. Deep drillings also have been of assistance in determining underground conditions. The strata lie one upon another in a nearly horizontal position as shown by figure 4, the older beds being lowest down. These rock are great beds of lime stone, chalk, shale, sand stone and clay. They extend through and beyond Nebraska to other states, having a wide range in the Great Plains. Lying on the bed rock is a mantle of loose rock consisting of glacial, loess, alluvial and dune sand formations.

The oldest exposed rocks of Nebraska are in the southeastern counties. They are overlaid to the west by a succession of newer formations. Figure 4 shows the areal distribution of the principal rocks as they lie either at the surface or below the mantle or at the surface rock. In point of age the exposed rocks belong to the Carboniferous, Cretaceous, Tertiary and Quaternary Systems, each being represented by four or more formations.

*Carboniferous Formations.*—These outcrop in the southeastern counties (Figure 4). They extend westward under newer formations and rise to the surface again in the front range of the Rocky Mountains and in the Black Hills (Figure 5). The Carboniferous rocks of Nebraska are covered in most of their outcrop area by glacial deposits. At places in certain states whose surface is in whole or in part outside the glacial region, these rocks occupy wide surface areas, as in southeastern Kansas and southwestern Missouri.

The name Carboniferous seems to have been given on account of coal beds which characterize the system, notably in Pennsylvania. In our state coal occurs in thin seams associated with much thicker beds of lime stones, shales, clays and sand stones. The Carboniferous formations in Nebraska belong to two series, the Pennsylvanian and the Permian, their total thickness being about 2,000 feet and consisting of fourteen formations of which the lower nine or ten are Pennsylvanian and the upper four or five Permian. Certain of these formations extend southward across Kansas, reaching as far as Oklahoma.

Pennsylvanian formations outcrop along the Missouri from Omaha to Rulo; along the Platte from Ashland to Plattsmouth; at Roca, in the Weeping Water and Little Nemaha valleys, and along the Big Nemaha

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\* Barbour, Vol. 1, Nebraska Geological Survey.

valley from Tecumseh and Pawnee to Rulo. Ledges and scarps of flint-bearing Permian lime stone stand out prominently in the Big Blue Valley at Holmesville, Blue Springs and Wymore.

The topography of the Carboniferous is for the most part rough, consisting of scarps, rock terraces and rather deep-cut ravines. The most resistant lime stone ledges contain considerable quantities of flint. The shale and clay formations slope downward and outward from beneath the rock ledges and hence appear less prominent. Soils are residual and of the clay, sand and loam classes. Flinty lime stone in the Permian produces "flint hills." This term has full significance in Kansas where such rocks outcrop more prominently and widely. There the name "Flint hills" denotes a rough topography and an inferior soil. Permian flints have limited range in Nebraska—hence only small areas of their residual soils.

Underground water (artesian) in the Carboniferous usually is saline and of little value for farm use. Shallow wells vary much in depth and strength. As a rule their water is hard. Springs are common in valleys, coming out of lime stones above shales. Trees grow on outcrop areas, except where the surface is bare or free from soil.

*Red Bed Formations.*—Everyone who has been in Oklahoma remembers the characteristic red soils of that territory. They are residual from iron stained formations of Pennsylvanian, Permian and later age. The red beds are exposed in Oklahoma, Southern Kansas, and around the Black Hills of South Dakota. In Nebraska, they lie about 3,000 feet below the surface of the western counties. Consequently we have red beds, but not at the surface.

*Dakota Formation.*—This is the lowest and oldest exposed member of the Cretaceous system in Nebraska. The formation is well known, being the source of much artesian water. It lies unconformably on the Carboniferous and consists of sandstone, clay, shale, pebble rock and small seams of lignite coal. In color, the sandstone is light to rusty; the clay or shale, gray, blue, yellow, red or mottled. The clay has considerable importance in brick making. The sand stone, usually massive, cross bedded and friable, is not well suited for building purposes.

The Dakota is between 300 and 400 feet thick. It outcrops prominently at Sioux City, Ponca, Tekamah, along the Platte below Ashland, near Beatrice, in the southern part of Jefferson county, and thence southward across Kansas. The outcrop zone (in Nebraska) varies from ten to thirty miles in width, with the bed rock quite generally covered with till and loess.

The topography usually is rough, especially so in the southern part of Jefferson county where sand stone ledges stand out as prominent ridges and scarps, entirely bare at places. The sand stone weathers down into loess sandy soil; the clays and shales give gradual slopes and arenaceous clayey soils. Erosion at such places is rapid, producing small bad land areas. Chemical deposits form ground water solutions and render small patches of ground quite unfit for cultivation at places.

Artesian water in the Dakota formation is an important resource in Nebraska and South Dakota. The source of a large part of this water seems to be in mountain areas to the west, i. e., in the Black Hills and Rocky Mountains. In quality the water is slightly mineralized, containing among other things, calcium carbonate, sodium chloride and iron oxide. Usually these are not present in such quantities as to make the water unfit for domestic purposes. Many farmers in Dixon, Cedar, Knox, Boyd and Seward counties obtain their drinking water and stock water from this source, the depth of wells ranging from 177 to 923 feet in the north eastern counties and much less in Seward county.

Shallow well water derived from Cretaceous formations which overlie the Dakota is of a poor quality at places in Boyd, Knox and Cedar counties and on that account numerous artesian wells are drilled to the Dakota in that part of the state and usually with favorable results. If prospecting proves the possibility of securing a good quality of artesian water in the Republican Valley, it will be of great value to farmers. Artesian water occurs there, and for that matter under all of central and western Nebraska, but the quality may prove undesirable and the pressure not sufficient for a flow.

To trace the Dakota sand stone across our state, going in and out of many deep ravines along the somewhat reduced ledges and sand ridges is to follow a forest belt of oaks. These occur in ravines and extend out onto the slopes as is well shown southeast of Endicott, Jefferson county. Other trees are associated with the oaks. Dakota soils are covered with prairie grass where the land is not timbered or farmed. The land is used more for pasturage than for farming.

*Graneros Formation.*—This lowest member of the Benton group lies on the Dakota, forming the impervious cap of the artesian beds. It is exposed along the Missouri from northern Cedar county past Ponca, Jackson, and Homer and is next seen in the river bed at Milford, Seward county, and at various places in Jefferson and Thayer counties. The formation consists of dark shales with a total thickness of from forty to sixty feet along their line of outcrop in Nebraska and 800 or 900 feet in the Black Hills. The water is of poor quality and the soils usually clayey and of less than average importance where exposed. Carbonaceous shales at the base of the Graneros are nearly always mistaken for coal by well drillers.

*Greenhorn Formation.*—This, the Mid Benton, consists of lime stones and shales and is only about twenty-five feet thick. The formation is easily distinguished by its oyster-like fossils which compose some of the limestone layers. The Greenhorn overlies the Graneros and is prominently exposed in Dixon, Dakota, Seward, Saline, Jefferson and Thayer counties. At most of these places it forms a light colored streak in the valley slopes. The rock is quarried near Gilead, Fairbury, Hubbell and other places along the line of outcrop. Ground water is of fair quality. The limited amount of soil which forms from the rock is productive.

The upper part of the Greenhorn is called the fence post horizon by Kansas geologists. It is used for flagstone and building purposes.

*Carlile Formation.*—This uppermost member of the Benton is composed of dark colored, finely bedded shales which contain fossil shells and at places thin layers of friable sand stone. The formation outcrops intermittently above the Greenhorn lime stone in northeastern Nebraska, from Cedar county to Dakota county, and in Seward, Jefferson, Thayer and Nuckolls counties. It is exposed over wide areas in northwestern Kansas where it forms hard pan and gumbo lands. The topography is mostly concealed by later deposits in Nebraska. At Ionia, Dixon county and a few other places, the shales occur in rather prominent bluffs which yield readily to agents of erosion. Soils freshly broken down are dark in color. Usually they contain substances that are injurious to vegetation. Older surfaces become yellowish from iron stain. Ground water rarely is of good quality. The Carlile ranges from 100 to 150 feet in thickness along its exposed edge in Nebraska, but it thickens to about 500 feet under the northwestern part of the state and in the Black Hills.

*Niobrara Formation.*—Where exposed this great chalk rock formation is a very characteristic feature, as in northwestern Kansas, along the Republican from Cambridge to Superior, and along the Missouri from the northwestern corner of Dixon county to near Pierre, South Dakota. Another small outcrop is at the state line, northeast of Chadron. In the vicinities of Niobrara (the type locality), Franklin, and Bloomington the formation stands out in the valley slopes as prominent bluish gray to yellowish chalk bluffs. Freshly exposed the rock is lead gray in color and in this condition is very generally called "blue shale." That it is not a shale is well proved. When weathered the chalk is ocherous.

The formation varies in thickness increasing from about 200 feet in north eastern Nebraska to fully 400 feet along the Republican. Some twelve to twenty feet or more of the base of the Niobrara might be called lime stone. Such rock is exposed north east of St. James and in deep ravines five miles south west of Superior. Above this horizon, most of the formation is a soft chalk in either thick or thin beds. It is composed nearly wholly of very minute calcareous shells, and a considerable number of oyster-like shells. Once in a while collectors secure shark teeth and remains of fish, birds and turtles from these beds.

The stone is used some for building purposes, lasting quite well if kept above the ground, but it is not a high grade material for construction. It is used as a cement material at Yankton, South Dakota and might be even more profitably employed for that purpose in Nebraska.

As a rule the chalk is bare without soil and vegetation. This is the usual condition on scarps. Thick vegetation crowds onto talus slopes indicating the presence of fertility at such places. Except where

it is thoroughly leached out, the Niobrara yields an undesirable quality of water for domestic purposes. The high bluffs are an impediment to travel, sharply cutting off certain valley-bottoms from the rest of the state.

*Pierre Shale.*—This formation has a wide range in Boyd and Knox counties and in the northern part of Holt county where it usually is known as soap stone. The outcrop area extends far up the Missouri and eastward to Cedar county. Another line of outcrop is in the Republican Valley between Republican City and Arapahoe and from McCook to the Colorado line. Outcrops occur also in the northwestern part of the state, beyond Pine Ridge. In all of its distribution in Nebraska the Pierre lies on the Niobrara, increasing the thickness from east to west, ranging from a few feet to about 1,000 feet. Whereas this statement is true in general there is a known exception. The Niobrara formation rises in a small fold at Cambridge and the overlying Pierre has been removed by erosion at that place.

Next to the Dakota, and perhaps the Niobrara, the Pierre is Nebraska's best known formation. This is not due to its economic importance, but to its bad water and alkali. Well drillers nearly all know of Pierre shale. They stop as soon as it is reached if boring or drilling for shallow water. Many farmers find it impossible to obtain a good shallow well on Pierre land. This is especially true in portions of Boyd and Knox counties. In some cases there, the location of farm buildings is determined not by roads and topography, but by the place where good water can be found.

Pierre soil is usually a dark heavy clay called gumbo. It is a loam on certain slopes, due to mixing with Tertiary sands. Certain lime stone beds in the Pierre have favorable effects on residual soils, making them open textured and sweet. The Pierre contains much alkali in slopes newly exposed by erosion. At places barren streaks of dark bare shale are a noticeable feature on valley sides, especially so between Chamberlain, South Dakota and the Nebraska line. At these places, chemical changes are active, resulting in the making of compounds which kill vegetation.

*Laramie Formation.*—The top member of the Cretaceous in Nebraska is the Laramie. It is exposed for a short distance along the south side of the North Platte near the Wyoming line and underlies Banner, Kimball and the southern part of Cheyenne county. The formation's widest range is in Colorado, Wyoming, Montana and North Dakota where it consists of friable sand stones, shales, thin lime stones and thick beds of coal.

*White River Formations.*—Overlying the Cretaceous formations of central and western Nebraska are thick layers of clay and sandy rock. They are of Tertiary age, belonging to the White river and Loup Fork series.\* Each of these divisions has been further separated into formations and yet smaller divisions.

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\* See Darton in Professional Papers 17 and 32; also Geologic Atlases 87 and 88.

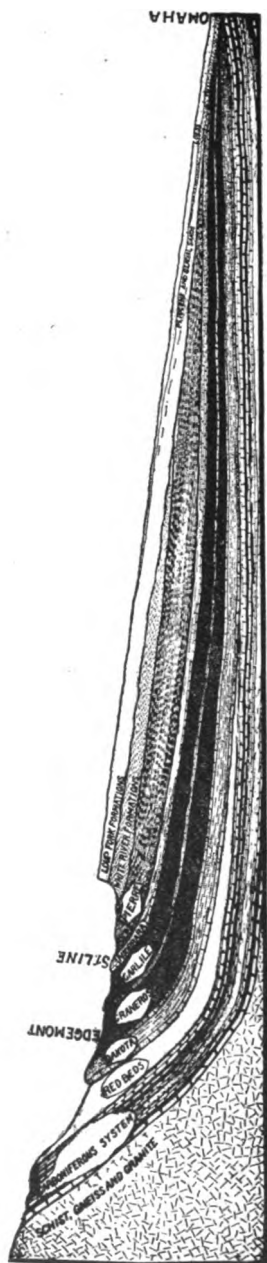


FIGURE 5.

The White river group in Nebraska consists of the Chadron and Brule formations of Darton (Figures 4 and 5). They are best shown in the Big Bad Lands of South Dakota, but extend under most of western Nebraska, outcropping in the deeper valleys. Their maximum thickness in South Dakota is about 1,000 feet.

The Chadron is the lowest Tertiary formation exposed in our state. It outcrops above the Pierre in Sioux and Dawes counties and in the North Platte Valley from near Scottsbluff to the Wyoming line. It lies on the Laramie formation in the last named area. The materials of the Chadron vary from greenish gray sandy clays to coarse textured, loosely cemented sand stones. At many places Titanotherium remains are found. They are the bones and teeth of large rhinoceros-like animals.

The Brule formation lies next above the Chadron and outcrops prominently along the north face of Pine Ridge, and in North Platte and Lodge Pole Valleys. At Scottsbluff, its exposed thickness is 500 feet. The formation consists of pink colored massive sandy clays and of less definite beds of sand stone and lime stone.

"The massive structure of the formation gives it the necessary solidity to preserve details of configuration, its softness permits ready carving by the rain and rivulets and the slight variation in hardness of its beds gives rise to unusual slopes."

Brule soils constitute much of our bad land surface. They erode rapidly and on that account appear arid. The formation is quite generally concealed by alluvial materials in Lodge Pole and North Platte Valleys, a condition of considerable importance to agriculture.

Water in the Chadron and Brule is usually of poor quality.

*Loup Fork Formations.*—These are of Miocene and Pliocene age.\* They seem to represent four formations which, from the oldest up, are the Gering, Arikaree, Ogallala and an unnamed formation. In general the materials of the Loup Fork beds are more sandy than those of the White river beds.

The Gering formation of Darton overlies the Brule, extending from Pine Ridge southward to and somewhat beyond the North Platte Valley. It outcrops along Pine Ridge and the North Platte where it caps some of the well-known buttes. Materials composing the Gering are water worn gravel and pebbles which, locally, are loosely bound together making friable sand stones and conglomerates. These deposits stand out prominently in some of the steep valley slopes. The formation is 200 feet thick in the vicinity of Chimney Rock.

The Arikaree is a light colored sandy formation whose texture is remarkably even except for bands of concretions and irregularly disposed sand stone ledges which modify it locally. The formation lies unconformably on the Gering, Brule and older formations and occupies

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\* These are described by Darton in folios 87 and 88 and in Professional Papers 17 and 32, U. S. Geological Survey.



much of the surface of north western Nebraska and southeastern Wyoming. It is 500 feet or more thick at places and has great prominence in scarps and buttes both in Pine Ridge, where it is the cap, and along the North Platte Valley. Its light colored sandy surface is a feature. Native timber, mostly pines, grows along the line of crop. Uplands are remarkably smooth at places and their soils produce except when there is a lack of moisture. Ground water, though usually deep, is soft to medium hard and of good quality.

Part of western Nebraska is occupied at the surface by a limy sand and pebble rock known as the Ogalalla formation. It overlies the Arikaree on both sides of the North Platte, in the western counties, and thickens southeastward towards Kansas. It is exposed above the Arikaree all along Lodge Pole Valley, where at places part of the formation is used for building purposes.

The Ogalalla, in Kansas, is known as the mortar beds. Its disconnected outcrops extend eastward along the Republican to Franklin county where a small area caps Lookout Mountain. The rock forms light colored streaks in the Republican Valley sides from Alma, Nebraska, to Wray, Colorado. At places where it is not concealed by loess and dune sand deposits, the Ogalalla occupies the uplands of the country between Hitchcock and Banner counties. Its soil is fertile, the only drawback being a lack of rainfall. Water, usually deep, is of excellent quality.

The latest Tertiary rocks in Nebraska were derived by erosion of several older formations, but mostly from the Arikaree and Ogalalla. They are, in part, the Equus beds. These deposits are sheets of clay and grayish sand and gravel which lie against old Tertiary rocks on the west and broaden out in valleys and basins to the east. They are well exposed at Long Pine and Atkinson. It is very probable that some of the sands and gravels under the smooth lands at Holdrege and Hastings belong to this age. The topography of these late Pliocene deposits is smooth. The soil is productive though sandy; and the water of good quality and usually near the surface.

*Glacial Deposit.*—These are so named on account of their origin, having been carried to the state from the north by one and perhaps two great ice sheets or glaciers. Formerly it was thought that the continental glacier had extended only once into Nebraska and that all of its deposits were a part of the Kansas till-sheet so well known in Iowa, northeast Kansas and northern Missouri. Field studies carried on during recent years have resulted in the separation of Nebraska's glacial materials into two divisions, a sand glacial plain below and a till plain above. They seem to be the Aftonian and Kansan deposits of geologists. Just how far west the ice sheets reached in our state during their advance to the south across the eastern countries is not definitely known. The known western limit of Kansas till lies along a line extending from western Knox county through York and Fillmore counties and thence southeastward following the Kansas river to near Kansas City where it bends eastward (Figure 2).

The till-sheet in Nebraska has a maximum thickness of about 100 feet in Lancaster county, but is much thinner at most places. It is composed of boulder clay, sand, pebbles and boulders, the first and last named materials being most characteristic. Boulders, mostly Sioux quartzites, granites, greenstones, schists, and limestones, show evidence of glacial wear and usually lie embedded in yellow, bluish or brownish boulder clay.

At places the Kansan till lies on glacial deposits of older age, but at most exposures it rests on an uneven bed rock. It is overlaid by loess except where that formation has been removed by erosion. At such places, till forms the soil and subsoil which usually are clayey, sandy and stony. The Kansan boulder clay is well known in southern Iowa, where it is known as hard pan. It is very sticky when wet.

The sand plain, lying below the till, comes to the surface most prominently in slopes of the Blue river valleys, as at Fairbury, De Witt and Ulysses. At these places boulders occur in stratified sands and gravels. The western and eastern limits of this sand plain are not known. The deposits are buried by loess on toward the west and by till on the east.

Water in glacial deposits, though usually hard, is of good quality.

*Loess*.—Agriculturally this deposit is very important, its surface constituting much of the state's most productive soil. Loess is generally known as yellow clay and as bluff deposit. It is buff colored, fine grained, even-textured and massive, usually without stratification. In some localities it contains considerable numbers of small light colored calcareous balls called concretions. The general appearance of the formation varies some at different localities. Apparently it is not the same in any two valleys and the so-called upland loess is quite unlike that in valleys. Likewise all loess is not of the same age. Neither is its origin known without dispute. Apparently the loess was laid down by both wind and water agencies. It has a maximum thickness of about 100 feet. It is often confused in the eastern counties with underlying brownish and yellow clay which usually contains pebbles and a few boulders. These should serve as a sufficient mark of distinction. Exposures in railroad cuts near Nebraska City, Omaha and Lincoln show well these bands of glacial clays and loess.

*Dune Sand*.—This is the prevailing formation in the Sand Hill Region. It is composed principally of fine wind-blown sand which as a rule forms both the soil and the subsoil.

Dune sand is a wind modification of Loup Fork, alluvial and loess formations of which the Arikaree seems to have been the principal source.

*Alluvium*.—This is flood plain deposit of streams. In origin it is river wash. Its depths and widths vary greatly in different valleys. The largest alluvial area is along the Platte where the depth ranges from 25 to 200 feet or more and the width from one and one-half to twenty miles (Figure 2). Alluvial materials are mostly sand and gravel, grading

into pebble deposits at places. Clay is found and in more or less distinct layers at certain depths in some localities. The quality of alluvium and alluvial soils varies more than is generally thought; its extremes are gumbo and gravel.

The sources of alluvium are the formations over which rivers flow. As the formations vary in kind, so do their river deposits. Tributary streams heading in different soils and rocks do not all drop the same kind of sediment on the floor of their trunk valleys. The load thus brought down may be clay, silt, sand, pebbles or even larger rock fragments. In this way several types of alluvial soil are formed.

*Soil Regions.*—The prevailing notion that Nebraska is everywhere the same, is an error.\* The state is divided into four typographic regions and it has been found that the soil regions correspond quite closely with these, the Loess, Sand Hill, High Plains and Bad Land region (Figure 2). Over each region a single soil type is most prevalent.†

*The Loess Region.*—This includes about 42,000 square miles of the state. It is so named on account of its prevailing surface deposit, the loess. Formerly it was divided into the loess and glacial regions. But since the leading soil type, Marshall silt loam, is both glacial and loessal in origin, we are now using only one name, that of the formation with largest distribution. Glacial soils form only a phase of the region. There are several small soil areas (not loessal) in the region. They are mostly alluvial and glacial; also various areas of residual soil on bed rock exposures.

Broad Valley-bottoms are a most noticeable feature in the Loess Region. The Uplands consist of hilly lands, the smooth of loess plains. At places bordering valleys the plains are modified by canyons, especially in the western part of the region. Altitude in the Loess Region decreases from about 3,500 feet in the west to under 1,000 feet along the Missouri below Omaha. Ground water is near the surface in alluvial lands and from 25 to 200 feet in depth in upland, increasing westward. Land values are highest in the eastern counties, decreasing westward with the rainfall. Marshall silt loam occupies the larger part of the region and is the most valuable soil. It consists of from six to twenty inches averaging about fifteen inches of brown to black silt loam which at places grades into sandy loam. This type of soil represents the loess and a portion of glacial deposits both in its original position and that which has been transplanted to valley-bottoms. It is badly eroded into bluffs and canyons along the borders of valleys at which places it frequently grades into Miami silt loam. Drainage is perfect except on marsh lands. Alkali prevails in the undrained places. The subsoil is buff to grayish and deep.

Mechanical analysis shows the Marshall silt loam to contain the

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\* Condra, Geography of Nebraska.

† Barbour, Repts. State Board of Agriculture, 1894, 1898.

more clay in the eastern part of the region and the larger proportion of sand to the west. The following samples illustrate the difference:

*Mechanical Analyses.*

	Sarpy County. Per cent.	Custer County. Per cent.
Fine gravel .....	.1	.00
Coarse sand .....	.3	.01
Medium sand .....	.1	.46
Fine sand .....	.4	32.20
Very fine sand .....	10.3	.00
Silt .....	69.6	49.42
Clay .....	19.1	6.60

Although Marshall silt loam is the prevailing soil of the region many other types appears locally. The Miami silt loam is another loessal soil, being lighter in color. At places in the eastern portion of the region erosion has entirely removed the loess and exposed the underlying glacial drift. This condition is well shown in hillsides where a part of the soil is loess and part glacial. Stream erosion has gone so far at places as to cut through glacial drift and into bed rock. Where such a condition exists we have a belted arrangement of the soils in valleys. (Figure 6.) Each formation thus exposed has its characteristic soil. The residual (sedentary) soils formed on these bed rock surfaces were described with the geological formation. Further mention can be made of only one bed rock soil, that of the Pierre formation. Its areal distribution is shown by Figure 4. The leading soil of this formation is a gumbo, usually quite strongly alkaline. When wet it is exceedingly sticky and adhesive. When dry it bakes readily, becoming difficult to work. This soil is chiefly useful for the production of grass crops and for pasturage. Where under tillage it produces good crops of wheat and fair crops of oats. Its most general use, however, is in the production of grass crops used as meadow or pasture.

All valleys in the regions have more or less alluvial soil, the Platte and Missouri leading in area with several types. (Figure 7.) Alluvial soils along the Missouri and Nemaha rivers are rather heavy in texture containing considerable amounts of clay, but at places they grade into silty loams. The bottom land soils of the Elkhorn, the Loup and the Platte rivers are silt loams, sandy loams, and gravel wash. Locally, they are clayey. The Big and Little Blue alluvial soils are mostly sandy loams, while those of the Republican are more silty and clayey in nature, grading into sandy loams and sand wash in certain tributaries. Many of the bottom land soils, especially of the Missouri, Platte and Nemaha rivers need drainage badly for their best utilization. If well drained they are very fertile. Most of these soils are adapted to general farming, producing large crops of corn and small grains. The alluvial bench lands of the Republican have become noted for their production of alfalfa.

The silt loams, sandy loams and clay loams of the Loess Region are

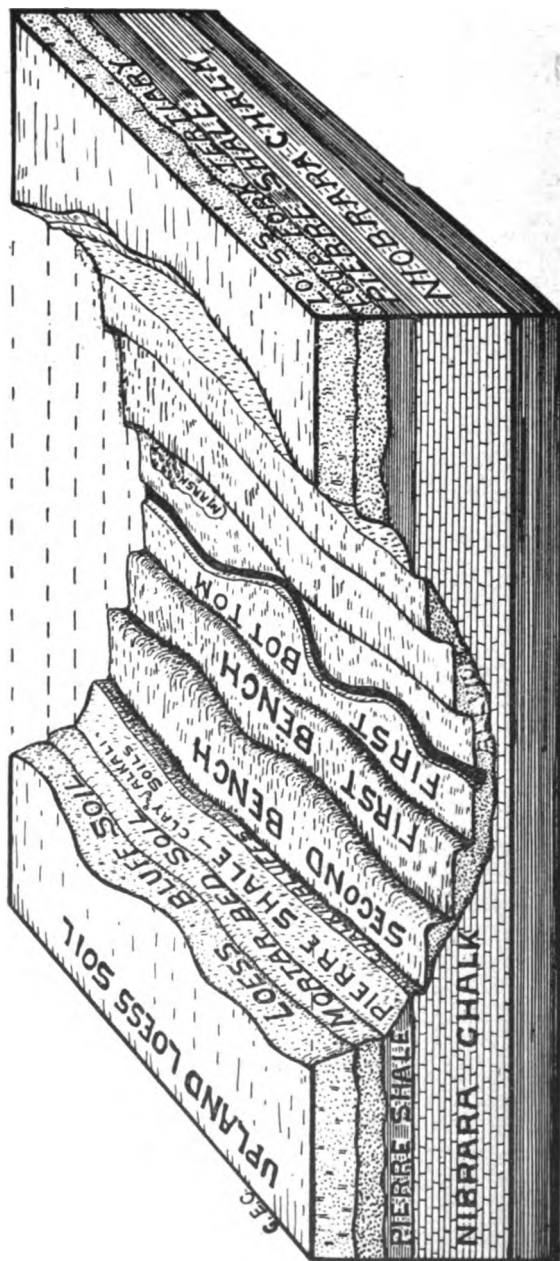
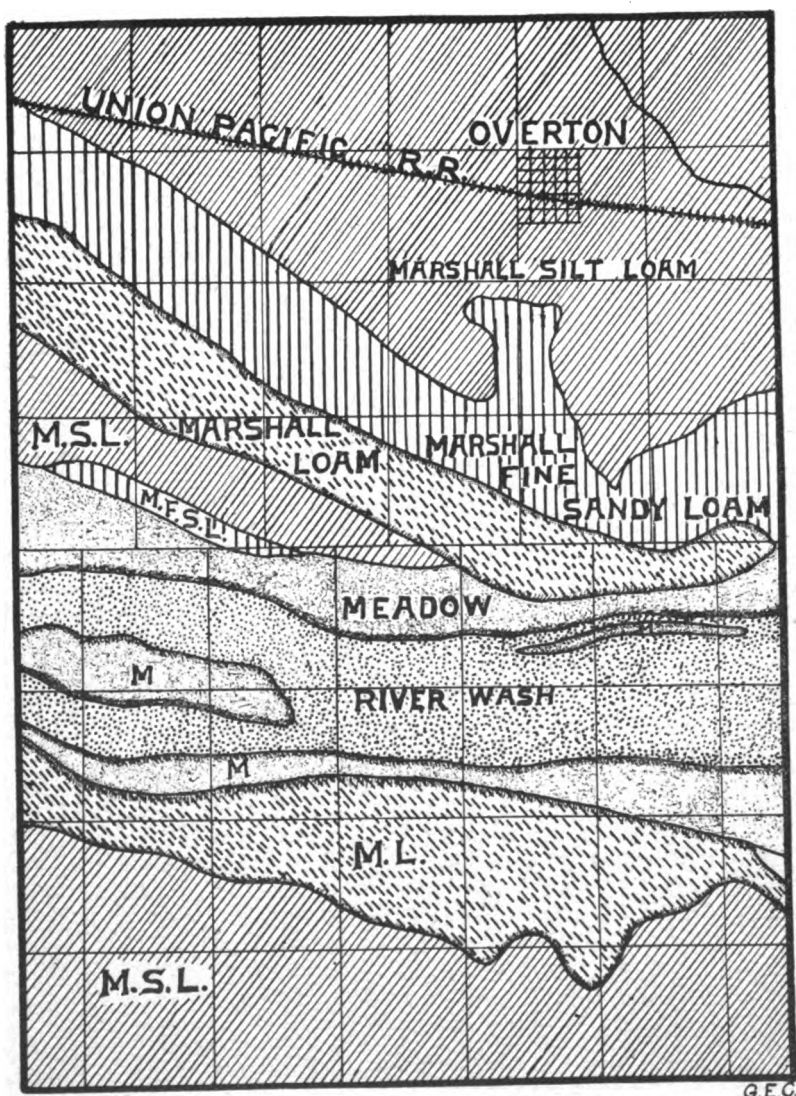


FIGURE 6.



# PLATTE VALLEY SOILS

FIGURE 7.

chemically quite rich. As a rule they contain an abundance of plant food materials and are usually well supplied with organic matter. The nitrogen and the organic components are most liable to become deficient by continued cropping. Apparently all of the soils are well supplied with salts of potassium, and most of them contain sufficient salts of phosphorus. In some instances, however, the last named substance seems to be deficient in amount. The soils are noted for their fertility and productivity. They are for the most part well drained, and quite easily tilled. Corn, wheat and oats are the crops most commonly produced. In some localities farmers have reduced the productive capacity of soils by constant cropping of corn. Rotation of corn with clover or alfalfa keeps up the fertility where mineral elements are not deficient. Where the soils have become depleted by following a single crop system the most feasible way of bringing back the productive capacity is by growing a large amount of live stock together with grass pastures of clover and alfalfa meadows. The clay loams get out of condition much sooner than the silt loams. In order to keep up their productive capacity a more frequent rotation to grass, or grasses and clover, or alfalfa, is necessary. When properly managed these soils are very fertile. Both the silt loams and the clay loams are retentive of moisture, and will stand drouth quite well, especially when the supply of organic matter is kept up to the proper amount.

*Sand Hill Region.*—This soil province with its outlying areas occupies about 18,000 square miles of the state. All of the region is not covered with sand hills. Numerous small basins and large dry valleys, quite free from drifting sand, occupy a considerable part of the surface. The land forms are dunes, ridges, basins, dry valleys and blow outs. Some of the dunes are 50 feet or more in height.

Drainage is nearly all underground. The surface water forms are marshes, intermittent ponds and permanent lakes. Certain spring-fed rivers head in the sand hills, but they receive very little surface water.

Sand hill soils vary from a light sandy loam to pure sand. Dune sand is the prevailing type, the exceptions being small areas of alluvial, loess and Loup Fork soils. Except in basins and dry valleys there is little difference between soil and subsoil. Silting-in of fine particles makes richer soil in basins. None of the soils are very well supplied with silt, clay and humus. The valley soils contain the largest amount of organic matter. Dune sand has very little humus and as a consequence it drifts badly when exposed to wind.

Dune sand is marked by its lack of fertility. It supports sparse vegetation and is best suited for grazing purposes. Soils in the basins and valleys are more productive, furnishing a considerable amount of prairie hay, and frequently yielding good grain crops and alfalfa.

It is quite probable that the sand hills might be reclaimed by forestation, a method which is being tried by the Bureau of Forestry on the Dismal River Forest reserve.

*High Plains Region.*—This has been called the western region. It occupies the highest part of Nebraska and extends westward and southward into other states. The region contains broad, smooth table lands, deeply eroded valley-slopes and quite large areas of bottom land, in all about 15,000 square miles in Nebraska.

The most generally distributed soil is a close textured sandy loam. Stony soils, pebbly loams, gravel soils and clays occur on valley-sides. The tendency of all these soils is to become alkaline. The following mechanical analysis of a sample taken in Kimball county is fairly representative of the sandy, most common soil type on the High Plains Region.

	Per cent.
Fine gravel .....	8.46
Coarse sand .....	5.64
Medium sand .....	15.41
Fine sand .....	37.95
Silt .....	25.85
Clay .....	1.8

These sandy loams are usually well supplied with fertility, and where the rainfall is sufficient produce abundant crops of small grains and sometimes of corn, though the elevation is so great that corn is not a sure crop even where the water supply is sufficient. The short native grasses are very nutritious, and well adapted to grazing.

This region, although deficient in rainfall, is capable of producing quite large yields when drouth resistant crops are cultivated. The introduction of emmer, macaroni wheat, and Kherson oats have made it possible to raise fair crops almost any year on these fertile soils. Under proper soil-tillage, winter wheat is successfully grown, especially during years of maximum rainfall, and the yields of other small grains are increased. Alfalfa does well on most soils although its yield is less here than on better watered lands. Irrigation where possible and feasible makes crop production certain; proper adherence to the principles of soil tillage makes much more certain the production of those grain crops adapted to the region. At present the region is sparsely settled. It is devoted chiefly to stock ranches, the cattle ranging upon the rich native grasses. A more thorough knowledge of crops and methods would not change the cattle raising industry so much as it would enable larger numbers to be reared and fed upon the same land. By close adaptation to the conditions agriculture in this region should assume larger proportions than it has in the past.

*Bad Land Regions.*—The largest of these lies in the northwestern corner of the state, beyond Pine Ridge. Another is in the North Platte Valley at the foot of Scottsbluff. The Bad Lands are of comparatively little importance agriculturally. Their area is small, water bad, the land usually unstable and rough. The prevailing soil type is a clay frequently strongly impregnated with alkali.



The soil where not eroding rapidly produces native grasses, but owing to the difficulty with which it is worked and its great liability to bake, it is not very well adapted to the production of cereal crops. The soils are quite rich in the elements of fertility but owing to their heavy texture it is not easy to convert this fertility into crops. Stock raising is the chief industry.

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**CLIMATOLOGICAL REPORT FOR THE YEAR  
1906.**

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**G. A. LOVELAND, SECTION DIRECTOR.**

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## CLIMATOLOGICAL REPORT FOR THE YEAR 1906.

G. A. LOVELAND, SECTION DIRECTOR.

### ATMOSPHERIC PRESSURE.

The average atmospheric pressure for the state was 30.04 inches, which is 0.01 of an inch below the normal. The highest barometer was 30.82 inches, at Valentine on January 7; the lowest was 29.22 inches, at Ashland on April 24, and at Lincoln on November 16. The yearly range for the state was 1.60 inches.

### TEMPERATURE.

The mean annual temperature for the state was  $49.0^{\circ}$  which is  $0.4^{\circ}$  above the normal of stations with records of ten years or more. The mean temperature for March, the coldest month, was  $26.1^{\circ}$ , and for August, the warmest month,  $72.5^{\circ}$ . The lowest temperature was  $28^{\circ}$  below zero at Agate on March 16, and the highest was  $104^{\circ}$ , at Lynch and at Santee on August 16. The average local annual range of temperature, as computed from the records of 76 stations for the sections of the state, was as follows: northeastern,  $112^{\circ}$ ; southeastern,  $108^{\circ}$ ; central,  $110^{\circ}$ ; southwestern,  $108^{\circ}$ ; western,  $109^{\circ}$ ; northwestern,  $119^{\circ}$ ; state,  $111^{\circ}$ . The greatest annual range was  $128^{\circ}$ , at Lynch, and the least was  $102^{\circ}$ , at Bellevue and at Kimball. The greatest daily local range of temperature was  $71^{\circ}$ , at Kimball on February 3.

### PRECIPITATION (RAIN AND MELTED SNOW.)

The average total precipitation over the state for the year was 26.98 inches, which is 2.56 inches above the normal of stations with records of ten years or more. The greatest total precipitation was 43.55 inches, at Wisner, and the least was 16.97 inches, at Bridgeport. The greatest monthly average for the state was 4.35 inches, in April, and the least was 0.46 of an inch, in January. The greatest local monthly precipitation was 10.75 inches, at Hartington in August, and the least was none, at one station in January, and at four stations in November. The greatest amount recorded as falling in twenty-four consecutive hours was 4.95 inches, at Wahoo on September 16.

**Monthly, Annual, and Seasonal Precipitation for Nebraska, with Departures From the Normal.**

YEAR	January		February		March		April		May		June		July	
	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure
1876....	0.20	-0.40	0.55	-0.14	1.85	+0.70	1.45	-1.12	2.54	-1.15	1.99	-1.90	4.28	+0.72
1877....	0.98	+0.38	0.31	-0.38	0.76	-0.39	2.86	+0.29	5.79	+2.10	3.50	-0.39	1.45	-2.11
1878....	0.44	-0.16	0.31	-0.38	1.95	+0.80	1.85	-0.72	4.09	+0.40	5.19	+1.30	5.71	+2.15
1879....	0.80	+0.20	0.90	+0.11	0.70	-0.45	2.61	-0.04	3.43	-0.28	4.27	+0.38	5.92	+2.36
1880....	0.38	-0.22	0.18	-0.51	0.50	-0.65	0.72	-1.85	2.11	-1.58	4.44	+0.55	3.36	-0.20
1881....	0.91	+0.31	1.64	+0.95	1.51	+0.36	2.02	-0.55	6.28	+2.59	5.36	+1.47	3.38	-0.18
1882....	0.56	-0.04	0.63	-0.06	0.15	-1.00	3.58	+1.01	4.93	+1.24	4.34	+0.45	3.40	-0.16
1883....	1.04	+0.44	0.92	+0.23	0.50	-0.65	2.79	-0.22	5.39	-1.70	7.18	+3.29	2.81	-0.75
1884....	0.46	-0.14	0.69	0.00	1.96	+0.81	2.60	-0.03	3.06	+0.63	2.04	-1.85	5.79	+2.23
1885....	0.51	-0.09	0.84	+0.15	0.46	-0.69	3.30	-0.73	3.73	+0.04	3.66	-0.23	4.32	+0.76
1886....	1.21	+0.61	0.81	+0.15	2.01	+0.86	2.64	-0.07	3.39	-0.30	2.96	-0.93	1.84	-1.72
1887....	0.49	-0.11	0.78	+0.09	0.39	-0.76	2.32	-0.25	2.27	-1.42	3.22	-0.67	3.10	-0.46
1888....	0.47	-0.13	0.74	+0.05	2.13	+0.98	2.39	-0.18	5.63	+2.14	3.11	-0.78	3.10	-0.46
1889....	0.91	+0.31	0.29	-0.40	1.06	-0.09	2.33	-0.24	2.69	-1.00	3.55	-0.34	5.77	+2.21
1890....	0.78	-0.18	0.36	-0.33	0.84	-0.31	1.97	-0.60	2.34	-1.35	3.63	-0.26	2.10	-1.46
1891....	1.43	-0.83	1.13	+0.44	1.86	+0.71	3.14	-0.57	2.90	+0.79	7.07	+3.18	5.48	+1.92
1892....	0.86	-0.26	0.99	+0.30	1.62	+0.47	4.00	-1.43	5.63	+1.94	2.18	-1.71	2.57	-0.99
1893....	0.13	-0.47	0.84	-0.15	1.32	+0.17	1.25	-1.32	2.66	-1.03	3.10	-0.79	2.62	-0.94
1894....	0.60	0.00	0.58	-0.11	0.90	-0.25	1.97	-0.60	0.91	-2.78	3.19	-0.70	1.43	-2.13
1895....	0.36	-0.24	0.80	+0.11	0.72	-0.43	2.28	-0.29	2.40	-1.29	4.67	+0.78	1.73	-1.83
1896....	0.37	-0.23	0.16	-0.53	1.45	+0.30	4.82	+2.25	4.03	+0.34	4.04	+0.15	3.87	+0.31
1897....	0.79	+0.19	0.59	-0.10	1.49	+0.34	3.82	-1.25	1.66	-2.03	3.60	-0.29	2.57	-0.99
1898....	0.67	-0.07	0.43	-0.26	0.61	-0.54	2.14	-0.43	4.86	+1.17	3.54	-0.35	2.12	-1.44
1899....	0.24	-0.36	0.61	-0.08	0.92	-0.23	0.99	-1.58	3.71	+0.02	3.83	-0.06	2.87	-0.69
1900....	0.07	-0.53	1.07	+0.38	0.62	-0.53	4.68	+2.11	2.32	-1.37	2.50	-1.39	4.54	+0.98
1901....	0.17	-0.43	0.83	+0.14	1.90	+0.75	2.32	-0.25	1.66	-1.83	4.54	+0.65	1.59	-1.97
1902....	0.64	+0.04	0.39	-0.30	1.18	+0.03	1.07	-1.50	4.14	-0.45	5.12	+1.23	5.93	+2.37
1903....	0.22	-0.38	1.42	+0.73	0.72	-0.43	1.80	-0.77	7.27	+3.58	2.21	-1.68	4.94	+1.38
1904....	0.35	-0.25	0.13	-0.56	0.53	-0.62	2.00	-0.57	3.68	-0.01	4.71	+0.82	4.44	+0.88
1905....	1.07	+0.47	0.76	+0.07	1.31	+0.16	3.70	+1.13	5.73	+2.04	5.04	+1.15	4.67	+1.11
1906....	0.46	-0.14	0.64	-0.05	1.87	+0.72	4.35	+1.78	2.76	-0.93	2.70	-1.19	2.70	-0.86
Normal	0.60	.....	0.69	.....	1.15	.....	2.57	.....	3.69	.....	3.89	.....	3.56	.....

*Monthly, Annual, and Seasonal Precipitation for Nebraska, with Departures from the Normal—Concluded.*

YEAR	August		September		October		November		December		Annual		Crop Seas'n	
	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure
1876....	3.25	+0.49	3.63	+1.54	0.98	-0.64	1.68	+1.00	0.24	-0.41	22.64	-1.30	13.51	-2.96
1877....	2.01	-0.72	2.06	-0.03	2.92	+1.30	0.82	+0.14	1.85	+1.20	25.34	+1.40	15.64	-0.83
1878....	2.16	-0.60	1.90	-0.19	0.89	-1.23	0.84	-0.04	0.44	-0.21	25.07	+1.13	19.00	+2.53
1879....	1.54	-1.22	1.40	-0.69	1.03	-0.59	1.31	+0.63	0.58	-0.07	24.39	-0.45	17.77	+1.30
1880....	3.87	+1.11	2.71	-0.65	1.78	+0.18	0.53	-0.15	0.62	-0.03	21.23	-2.71	14.50	-1.97
1881....	1.18	-1.68	3.77	+1.68	3.42	+1.80	0.87	+0.19	0.57	-0.08	30.91	+6.97	18.22	+1.75
1882....	1.31	-1.45	0.92	-1.17	2.23	-0.61	0.45	-0.23	1.01	+0.36	23.51	-0.43	17.66	+1.09
1883....	3.21	+0.45	2.04	-0.05	3.65	+1.96	0.24	-0.44	1.04	+0.39	30.74	+6.80	21.38	+4.91
1884....	2.97	-0.21	1.66	-0.43	1.71	-0.09	0.16	-0.52	0.90	+0.25	24.00	-0.06	16.46	-0.01
1885....	3.48	-0.72	1.76	-0.33	1.80	-0.18	1.18	+0.50	0.94	-0.29	25.98	-2.04	18.49	+2.02
1886....	3.22	-0.46	2.69	+0.60	0.83	-0.76	1.24	+0.56	0.81	-0.16	23.71	-0.23	11.05	-2.42
1887....	4.13	+1.37	4.09	+2.00	0.88	-0.74	0.61	-0.07	0.71	+0.06	22.99	-0.95	15.04	-1.43
1888....	3.11	-0.35	0.83	-1.71	0.93	-0.69	0.22	-0.46	0.45	-0.20	22.88	-1.08	17.64	+1.07
1889....	2.40	-0.36	1.48	-0.61	0.93	-0.69	0.86	+0.18	0.37	-0.28	22.61	-1.30	16.74	-0.27
1890....	2.24	-0.52	0.99	-1.10	0.93	-0.69	0.87	+0.19	0.13	-0.52	17.18	-6.76	12.28	-4.19
1891....	2.92	+0.16	1.28	-0.81	1.96	+0.34	0.32	-0.36	1.13	+0.48	30.62	+6.68	21.51	+5.04
1892....	3.20	+0.44	0.48	-1.61	1.71	+0.09	0.27	-0.41	0.61	-0.04	24.12	+0.16	17.68	+1.11
1893....	2.33	-0.43	1.02	-1.07	0.31	-1.31	0.33	-0.35	0.89	+0.24	16.80	-7.14	11.96	-4.51
1894....	0.74	-2.02	1.21	-0.88	1.21	-0.41	0.13	-0.55	0.43	-0.22	13.30	-10.64	8.24	-8.23
1895....	3.04	+0.28	1.39	-0.70	0.22	-1.40	0.94	+0.26	0.15	-0.50	18.70	-5.24	14.12	-2.35
1896....	1.81	-0.95	2.37	+0.28	1.33	+0.21	1.21	+0.53	0.23	-0.42	26.17	+2.23	18.57	+2.10
1897....	2.60	-0.16	1.26	-0.83	3.34	+1.72	0.51	-0.17	1.31	+0.66	23.54	-0.40	14.25	-2.22
1898....	2.24	-0.52	2.30	+0.21	0.90	-0.72	0.57	-0.11	0.32	-0.39	20.70	-3.24	14.90	-1.57
1899....	3.26	+0.50	0.46	-1.63	1.00	-0.62	0.88	+0.20	0.84	+0.19	19.51	-4.43	14.66	-1.81
1900....	3.46	+0.70	2.66	+0.87	2.98	+0.46	0.15	-0.53	0.31	-0.31	24.46	+0.52	17.51	-1.93
1901....	2.25	-0.51	4.55	+2.46	1.64	+0.02	0.50	-0.18	0.60	-0.05	22.76	-1.18	12.56	-3.01
1902....	3.25	+0.49	3.54	+1.45	1.62	+0.30	0.52	-0.16	1.40	+0.75	29.09	+5.15	19.51	+3.04
1903....	5.05	+2.29	1.52	-0.57	1.25	-0.87	0.77	+0.09	0.10	-0.55	27.27	+3.38	21.27	+4.80
1904....	2.80	-0.04	1.98	-0.11	2.44	+0.82	0.11	-0.57	0.20	-0.45	23.37	-0.57	17.63	+1.16
1905....	2.79	-0.03	3.79	+1.70	1.23	-0.39	1.53	+0.85	0.02	-0.63	31.66	+7.71	21.93	+5.46
1906....	3.66	+0.90	3.33	+1.24	2.86	+1.23	0.64	-0.04	1.04	+0.39	26.98	+3.04	16.17	-0.30
Normal	2.76	.....	2.09	.....	1.62	.....	0.68	.....	0.65	.....	23.94	.....	16.47	.....

## WIND.

The prevailing direction of the wind was from the northwest. The average velocity over the state was 9.6 miles an hour, which is 0.2 of a mile an hour below the normal for the past twelve years.

*Wind and Humidity Table.*

STATIONS	WIND					HUMIDITY		
	Miles	Mean	Max.	Dir.	Date	Mean	Lowest	Date
Lincoln.....	98811	10.7	60	nw.	July 1	70	15	June 7
North Platte.....	69601	7.9	59	n.	April 18	74	20	June 7
Omaha.....	77833	8.9	52	n.	June 30	67	14	June 7
Valentine.....	95321	10.9	68	nw.	April 24	70	9	April 23

*Monthly Means.*

MONTHS	Mean Barome- ter	TEMPERATURE		Average Wind Velocity	PRECIPITATION		
		Mean	Average*		Mean	Average*	Snow
January.....	30.08	30.0	21.2	9.8	0.46	0.60	4.9
February.....	30.20	29.4	23.8	10.1	0.64	0.69	4.6
March.....	30.18	28.1	34.4	11.2	1.87	1.15	16.4
April.....	29.98	52.6	49.2	12.0	4.85	2.57	0.8
May.....	29.88	60.2	59.5	10.8	2.78	3.69	T.
June.....	29.88	66.7	69.2	9.6	2.70	3.89	0.0
July.....	30.00	70.2	74.4	7.2	2.70	3.58	0.0
August.....	29.98	72.5	72.9	7.6	3.66	2.78	0.0
September.....	30.01	64.6	63.5	8.4	3.33	2.09	0.0
October.....	30.08	49.1	50.7	10.3	2.35	1.62	6.4
November.....	30.14	36.3	35.6	9.3	0.64	0.68	1.2
December.....	30.17	30.9	26.3	8.9	1.04	0.65	1.6

\* For past thirty-one years.

Table of Killing Frosts for Nebraska.

STATIONS	Last of Spring	First of Autumn	STATIONS	Last of Spring	First of Autumn
Agate .....	June 25	Sept. 29	Holdrege .....	May 6	Oct. 9
Ainsworth .....	May 8	Oct. 5	Hooper .....	May 6	Oct. 9
Albion .....	May 10	Sept. 30	Imperial .....	May 29	Oct. 5
Alliance .....	May 7	Oct. 5	Kearney .....	May 6	Oct. 6
Alma .....	May 6	Sept. 30	Kennedy .....	June 24	Oct. 5
Anoka .....	May 6	Sept. 30	Kimball .....	May 5	Oct. 4
Arapahoe .....		Oct. 4	Kirkwood .....	May 8	Oct. 5
Arcadia .....		Sept. 28	Leavitt .....	May 8	Oct. 8
Ashland .....	May 6	Oct. 10	Lexington .....	May 8	Sept. 29
Ashton .....		Oct. 8	Lincoln .....	Mar. 30	Oct. 10
Atkinson .....		Oct. 9	Loup City .....	May 6	Sept. 30
Auburn .....	May 9	Oct. 9	Lynch .....	May 8	Sept. 30
Aurora .....	May 6	Oct. 9	Madison .....	May 6	Oct. 9
Beatrice .....	May 9	Oct. 10	Marquette .....		Oct. 10
Beaver City .....	April 15	Sept. 30	Mason City .....		Sept. 27
Bellevue .....	Mar. 31	Oct. 10	Merriman .....	May 6	
Blair .....	April 15	Oct. 10	Minden .....	May 6	Sept. 30
Bloomfield .....	April 15		Nebraska City .....	May 9	Oct. 10
Bridgeport .....	May 7	Oct. 5	Norfolk .....	May 6	Sept. 30
Broken Bow .....	May 6	Sept. 30	North Loup .....	May 6	Sept. 30
Burwell .....		Oct. 5	North Platte .....	May 6	Oct. 5
Callaway .....	May 6	Sept. 30	Oakdale .....	May 7	Sept. 30
Clearwater .....	May 6	Sept. 30	Oakland .....	May 6	Sept. 30
Columbus .....	May 6	Sept. 30	Odell .....		Oct. 10
Crete .....	May 6	Oct. 10	Omaha .....	Mar. 31	Oct. 10
Culbertson .....	May 4	Sept. 30	Palmyra .....	April 15	Oct. 10
Curtis .....	May 7		Pawnee City .....	May 9	Oct. 1
David City .....	May 6	Oct. 9	Plymouth .....		Oct. 10
Dawson .....	April 15	Oct. 10	Purdum .....	May 9	Oct. 9
Duff .....	May 8	Oct. 9	Ravenna .....	May 6	Sept. 30
Edgar .....		Oct. 10	Rulo .....		Oct. 10
Ericson .....		Sept. 28	St. Libory .....	April 26	Sept. 30
Fairbury .....	May 6	Oct. 10	St. Paul .....	May 6	Oct. 9
Fairmont .....	May 6	Sept. 28	Santee .....	May 6	Sept. 30
Fort Robinson .....	May 5	Oct. 5	Seneca .....	May 6	
Franklin .....		Sept. 30	Seward .....	May 5	Oct. 9
Freemont .....	May 6	Oct. 10	Springview .....	May 8	Oct. 9
Fullerton .....		Oct. 4	Stanton .....	May 6	Oct. 1
Geneva .....	May 8	Sept. 27	Superior .....	April 15	Oct. 9
Genoa .....	May 6	Oct. 9	Table Rock .....	May 6	Oct. 1
Gering .....	May 6		Tecumseh .....	May 6	Oct. 10
Gosper .....	May 6		Tekamah .....	April 15	Oct. 10
Gothenburg .....	May 6	Oct. 10	Turlington .....	May 6	Oct. 9
Grand Island .....	Mar. 28	Sept. 30	Univerty Farm .....	May 6	Oct. 10
Grant .....	May 6	Oct. 5	Valentine .....	May 8	Oct. 5
Guide Rock .....	May 6	Sept. 30	Wakefield .....	May 9	Sept. 30
Halsey .....	May 9	Oct. 5	Watertown .....		Sept. 30
Hartington .....	May 6	Sept. 30	Wauneta .....		Oct. 4
Harvard .....	May 6	Oct. 9	Weeping Water .....		Oct. 10
Hayes Center .....	May 6	Oct. 5	West Point .....	May 6	Oct. 10
Hay Springs .....	June 1	Oct. 9	Winnebago .....		Sept. 27
Hebron .....	May 6	Oct. 1	Wymore .....		Sept. 29
Holbrook .....	May 6	Sept. 30	York .....	April 15	Oct. 9



*State Comparative Data for the Year.*

YEARS	TEMPERATURE			Pre- cipita- tion	YEARS	TEMPERATURE			Pre- cipita- tion
	Mean	Max.	Min.			Mean	Max.	Min.	
1876.....	47.6	108	-25	22.64	1893.....	47.6	110	-38	16.80
1877.....	48.5	107	-16	25.34	1894.....	50.0	114	-38	13.30
1878.....	49.4	108	-16	25.07	1895.....	48.8	110	-34	18.70
1879.....	48.6	100	-27	24.30	1896.....	49.4	109	-23	26.17
1880.....	47.4	105	-26	21.23	1897.....	49.1	113	-26	23.54
1881.....	48.0	104	-35	30.91	1898.....	48.5	109	-22	20.70
1882.....	49.2	106	-21	23.51	1899.....	47.8	108	-47	19.51
1883.....	45.7	109	-34	30.74	1900.....	51.3	110	-29	24.46
1884.....	46.5	101	-39	24.00	1901.....	50.1	111	-38	22.76
1885.....	47.4	100	-27	25.98	1902.....	48.6	111	-39	29.09
1886.....	47.6	110	-33	23.71	1903.....	49.1	103	-34	27.27
1887.....	47.5	106	-32	22.99	1904.....	49.0	105	-27	23.37
1888.....	47.3	105	-36	23.86	1905.....	48.0	104	-45	31.65
1889.....	49.3	111	-27	22.64	1906.....	49.0	104	-28	26.98
1890.....	49.3	112	-34	17.18					
1891.....	47.7	110	-38	30.62	Average for				
1892.....	47.7	113	-42	24.12	81 years	48.4	107	-31	23.94

*Means for the Six Equal Sections of the State.*

SECTIONS	TEMPERATURE		PRECIPITATION			NUMBER OF DAYS—			
	Mean	Average*	Mean	Average†	Snow	Rainy	Clear	Partly Cloudy	Cloudy
Northeast.....	48.8	48.1	31.96	27.95	27.8	78.3	174.1	94.6	96.3
Southeast.....	51.3	50.5	29.85	30.15	28.1	71.0	171.8	101.4	91.8
Central.....	49.2	48.7	29.30	25.11	25.7	65.9	181.1	92.1	91.8
Southwest.....	50.7	50.4	23.51	23.74	35.9	56.6	192.4	87.5	85.1
West.....	47.7	47.8	23.81	17.60	47.9	71.1	186.2	113.8	65.0
Northwest.....	46.6	46.6	23.48	18.86	49.9	70.0	180.6	122.5	81.9
State.....	49.0		26.96		35.9	68.8	177.7	102.0	85.3

\* For twenty-one years.

† For thirty-one years.

*Supplemental Precipitation Table.*

STATIONS	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Agee .....	0.67	0.1	1.55	4.30	.....	0.78	0.64	.....	3.97	.....	.....	.....	.....
Anoka .....	.....	.....	.....	.....	.....	1.30	0.47	4.69	3.66	3.50	.....	1.14	.....
Arapahoe .....	0.75	.....	1.87	4.98	1.12	1.20	3.87	3.75	1.51	3.20	0.75	1.00	.....
Arcadia .....	0.6	0.93	0.70	6.79	0.51	0.56	4.98	4.36	2.85	3.40	1.13	1.25	28.06
Ashton .....	0.08	.....	0.20	8.10	0.87	1.07	5.97	3.29	1.98	2.49	0.82	0.47	.....
Atkinson .....	.....	.....	.....	.....	.....	0.82	1.40	4.06	1.57	2.66	0.29	0.71	.....
Aurora .....	0.20	0.50	1.10	.....	2.10	2.11	2.47	4.39	3.20	3.65	0.00	1.20	.....
Benkelman .....	0.60	.....	2.30	.....	.....	.....	0.58	.....	1.05	.....	.....	0.19	.....
Burchard .....	0.52	1.08	2.26	2.89	3.25	4.52	3.98	3.35	5.49	1.94	T.	1.10	30.38
Burge .....	1.06	0.45	2.19	1.79	4.40	.....	.....	.....	4.37	.....	.....	.....	.....
Burwell .....	0.50	0.30	1.23	5.21	.....	3.10	1.95	3.25	3.50	4.45	1.35	0.45	.....
Central City .....	0.95	1.50	2.65	10.13	4.88	6.43	4.81	3.14	2.24	3.74	0.57	1.02	40.56
Chester .....	0.60	0.43	2.03	3.19	2.85	1.54	1.33	4.25	3.06	2.10	0.60	.....	.....
Cody .....	0.35	0.16	.....	1.20	2.34	3.56	0.63	3.87	2.80	.....	.....	.....	.....
Crawford .....	0.40	0.86	.....	1.31	5.37	2.98	0.95	3.34	3.56	.....	.....	.....	.....
Curtis .....	0.45	0.60	.....	.....	.....	.....	1.34	.....	.....	.....	.....	.....	.....
Dubois .....	0.58	1.19	2.49	3.21	1.46	5.28	2.09	4.30	4.99	2.24	0.71	0.48	29.02
Dunning .....	0.50	0.45	1.10	5.80	.....	3.50	1.76	3.50	1.55	2.25	0.38	1.70	.....
Edgar .....	0.60	.....	2.05	3.35	2.95	1.85	2.98	2.47	3.95	4.39	0.00	0.80	.....
Ellis .....	0.60	0.90	2.15	2.75	2.80	4.70	4.66	1.05	3.95	1.65	0.30	1.00	27.41
Ewing .....	0.00	0.70	0.90	4.24	1.78	1.43	1.15	4.10	4.31	4.05	0.91	0.91	24.48
Franklin .....	0.38	0.53	2.30	3.87	.....	1.93	2.17	1.92	1.14	2.67	0.10	0.75	.....
Fullerton .....	0.70	0.70	1.75	5.70	2.72	2.59	2.77	2.03	3.05	3.96	6.63	1.42	28.02
Gering .....	T.	0.12	2.05	2.80	3.95	3.33	1.42	.....	.....	.....	.....	.....	.....
Gordon .....	0.47	0.30	1.16	4.50	.....	1.75	.....	.....	.....	.....	.....	.....	.....
Gosper .....	0.29	0.75	1.85	4.80	0.90	1.73	3.94	4.65	2.51	3.40	0.88	1.30	27.00
Grand Island .....	0.50	1.10	.....	4.88	4.02	3.91	5.50	3.43	2.39	3.28	0.28	1.10	.....
Greeley .....	0.30	0.40	0.50	3.90	0.45	2.18	3.45	2.25	2.70	3.21	0.62	1.00	21.06
Haigler .....	0.23	0.25	1.53	3.10	1.50	2.50	4.55	2.50	1.60	1.00	0.05	T.	18.53
Hendley .....	0.40	0.38	2.06	3.30	0.96	1.46	3.40	3.40	1.30	2.96	0.70	1.20	21.57
Hickman .....	0.20	0.58	2.45	1.75	3.00	4.75	6.50	2.00	6.00	.....	0.20	1.25	.....
Level .....	0.35	0.65	1.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lodge Pole .....	.....	.....	.....	.....	.....	1.65	1.20	2.55	2.10	.....	.....	0.30	.....
Lynch .....	0.60	.....	1.70	3.76	2.28	0.80	1.48	2.92	3.34	4.04	0.70	0.34	.....
Mason City .....	.....	0.45	1.10	9.40	.....	.....	4.60	4.30	2.84	4.45	1.30	1.40	.....
Merriman .....	0.15	.....	0.42	.....	1.66	1.10	0.64	2.50	1.40	.....	0.05	0.50	.....
Monroe .....	0.63	1.46	0.91	6.39	2.52	2.24	1.85	3.04	4.47	3.54	0.57	1.14	29.06
Nemaha .....	0.35	0.54	1.96	4.45	1.00	7.75	3.72	4.83	5.24	1.84	0.15	.....	.....
Odell .....	0.24	1.12	1.65	1.93	2.26	3.28	4.67	7.18	4.21	1.67	0.50	0.90	29.61
Osceola .....	0.20	1.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Palmer .....	0.30	0.40	2.00	8.02	1.80	6.65	3.95	2.50	3.20	3.20	T.	1.10	39.12
Plattsmouth .....	0.52	0.95	3.10	2.56	1.54	6.26	3.75	.....	.....	.....	.....	.....	.....
Red Cloud .....	0.85	0.51	.....	4.52	.....	1.50	4.42	.....	2.40	2.48	0.50	0.91	.....
Republican .....	0.55	0.29	1.80	.....	.....	.....	0.40	5.50	2.00	3.10	.....	0.50	.....
Rulo .....	0.75	2.05	1.85	4.14	0.72	3.87	1.88	8.85	8.77	1.85	2.20	0.30	32.23
Schuyler .....	0.60	1.15	1.72	3.77	4.90	2.22	3.20	4.71	4.40	3.32	0.25	1.06	31.30
Strang .....	0.20	0.40	3.00	5.53	2.54	2.16	5.11	4.15	2.23	3.08	T.	1.15	29.85
Stromsburg .....	0.30	1.08	.....	7.49	0.90	6.45	6.06	4.43	5.37	4.31	0.00	1.00	.....
Syracuse .....	0.55	0.55	2.88	2.18	0.82	4.46	3.73	1.49	5.80	1.25	0.73	0.55	24.99
Wahoo .....	0.60	0.60	2.52	7.72	1.05	6.05	5.17	4.25	9.77	2.68	0.50	1.00	41.91
Wallace .....	0.60	.....	.....	4.25	.....	2.20	.....	.....	.....	.....	.....	.....	.....
Watertown .....	.....	.....	.....	.....	1.04	1.95	4.41	3.74	1.90	3.92	1.36	1.04	.....
Whitman .....	0.20	0.07	2.25	2.28	4.15	2.53	.....	.....	.....	.....	.....	.....	.....
Wilber .....	0.52	0.70	1.85	3.98	2.58	3.32	2.75	3.87	4.95	1.14	0.15	1.00	26.81
Wilsonville .....	0.30	0.20	2.10	5.10	1.75	3.00	2.20	.....	.....	2.65	0.35	.....	.....
Winnemago .....	0.45	1.15	1.55	3.08	.....	.....	.....	2.90	5.27	2.80	0.61	0.62	.....
Wisner .....	0.59	0.82	2.82	8.48	4.34	4.35	2.28	3.02	8.40	5.03	1.01	2.41	43.55
Wymore .....	0.40	0.64	2.36	1.52	1.91	2.63	1.71	2.53	3.00	1.60	0.35	0.50	19.15

T., trace (when precipitation is less than 0.01 of an inch.)

*Climatological Data*

STATIONS	COUNTIES	Elevation	TEMPERATURE (DEGREES FAHRENHEIT)					
			Length of record, years	Annual mean	Highest	Date	Lowest	Date
NORTHEASTERN SEC								
Agee §	Holt						-17	Jan. 22
Atkinson	Holt	2108			99	Sept. 8		
Bellevue	Sarpy	1210	1	51.5	97	Sept. 9	-5	Feb. 5
Blair	Washington	1112	9	50.1	96	Aug. 16	-11	Feb. 14
Bloomfield	Knox		1	47.9	102	Aug. 16	-18	Jan. 8
Clearwater	Antelope	1791			103	Aug. 16	-20	Feb. 14
Columbus	Platte	1441	13	48.4	98	Aug. 17	-10	Feb. 14
Fremont	Dodge	1208	23	49.6	97	Aug. 17	-11	Mar. 17
Hartington	Cedar	1309	13	47.4	99	Aug. 16	-15	Jan. 8
Hooper §	Dodge	1228	9	48.7	98	June 16	-8	Feb. 14
Leavitt *	Dodge		8	49.9	102	Aug. 17	-8	Mar. 14
Lynch	Boyd				104	Aug. 16	-24	Jan. 8
Madison	Madison	1585	12	48.4	95	Aug. 15	-13	Feb. 14
Norfolk	Madison	1582	22	48.2	99	Aug. 19	-16	Jan. 8
Oakdale	Antelope	1722	18	47.0	98	Aug. 16	-15	Feb. 14
Oakland	Burt	1281	1	48.9	97	June 27	-12	Feb. 7
Omaha	Douglas	1108	36	51.1	97	Aug. 16	-8	Feb. 14
Santee	Knox		19	49.6	104	Aug. 16	-13	Feb. 14
Stanton	Stanton	1472	14	49.3	99	Aug. 16	-16	Jan. 8
Tekamah	Burt	1060	16	49.6	98	Aug. 16	-11	Feb. 15
Wakefield	Dixon	1367	10	48.0	99	Aug. 16	-17	Feb. 14
West Point	Cuming	1313			98	Aug. 17	-12	Feb. 14
Winnebago	Thurston						-24	Feb. 15
SOUTHEASTERN SEC.								
Ashland	Saunders	1120	15	51.4	99	June 16	-8	Mar. 17
Auburn	Nemaha	1051	14	51.2	99	Aug. 16	-10	Mar. 17
Aurora	Hamilton	1792			102	Aug. 17	-10	Mar. 17
Beatrice	Gage	1247	14	52.1	98	Aug. 16	-11	Mar. 17
Crete	Saline	1363	23	51.8	98	Aug. 16	-9	Mar. 17
David City	Butler	1807	17	49.4	94	June 16	-10	Feb. 14
Dawson	Richardson	945	10	53.4	103	Aug. 16	-2	Feb. 5
Fairbury	Jefferson	1316	11	52.1	102	July 20	-11	Mar. 17
Fairmont	Fillmore	1641	12	48.7	97	Aug. 16	-15	Mar. 17
Geneva	Fillmore	1633	14	51.1	98	Aug. 16	-11	Mar. 17
Harvard	Clay	1799	16	48.6	96	June 17	-12	Mar. 17
Hebron	Thayer	1453	21	51.2	100	Aug. 16	-8	Mar. 17
Lincoln	Lancaster	1189	28	51.5	98	Aug. 16	-5	Feb. 14
Nebraska City	Otoe	961			96	June 16	-9	Mar. 17
Palmyra §	Otoe	1142	7	51.5	98	June 16	-6	Mar. 17
Pawnee City	Pawnee	1175	3	51.8	98	Aug. 16	-11	Mar. 17
Plymouth	Jefferson	1419			97	Aug. 16		
Seward	Seward	1435					-12	Mar. 16
Superior	Nuckolls	1570					-7	Feb. 13
Tecumseh	Johnson	1114	18	51.8	101	Aug. 16	-15	Mar. 17
Turlington	Otoe	1224	15	51.0	100	Aug. 17	-7	Mar. 17
University Farm *	Lancaster		5	51.4	98	Aug. 16	-7	Mar. 17
York	York	1685	12	50.1	97	Aug. 17	-11	Ma. 17
CENTRAL SEC.								
Albion	Boone	1747					-15	Mar. 17
Broken Bow	Custer	2477	12	48.4	97	Sept. 8	-11	Jan. 8
Callaway	Custer	2555	12	49.4	98	Sept. 8	-13	Jan. 8
Genoa	Nance	1594	31	49.5	96	Sept. 8	-15	Feb. 14
Gothenburg	Dawson	2557	12	50.1	101	Sept. 8	-9	Jan. 8
Grand Island	Hall	1861	15	51.0	100	Sept. 8	-10	Feb. 12
Kearney	Buffalo	2147			96	Sept. 8	-8	Mar. 17
Lexington	Dawson	2385	17	48.6	97	June 30	-13	Mar. 16
Loup City	Sherman	2087	12	48.5	96	Sept. 8	-12	Feb. 14
North Loup	Valley	1961	18	48.6	100	Sept. 8	-12	Mar. 17
Purdum	Blaine		4	47.7	98	Sept. 7	-18	Jan. 6
Ravenna	Buffalo	2028	17	49.3	98	Sept. 8	-10	Mar. 17
St. Paul	Howard	1613	11	50.3	99	Sept. 8	-11	Mar. 17

## CLIMATOLOGICAL REPORT.

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for the Year 1906.

PRECIPITATION, IN INCHES								Number rainy days	SKY			Prevailing direction of wind
Length of record, years	Total for the year	Greatest monthly	Month	Least monthly	Month	Total snowfall	Number clear days		Number partly cloudy days	Number cloudy days		
24	33.27	5.86	July	0.72	Nov.	37.8	80	161	72	132	nw.	
10	32.39	7.04	May	0.50	Nov.	26.6	78				se.	
2	31.80	7.18	Sept.	0.03	Jan.	22.2	75				nw.	
		7.29	Sept.								nw.	
13	28.00	3.96	April	0.19	Jan.	16.2	85	202	52	111	nw.	
26	39.86	6.18	April	0.43	Nov.	27.0	90	172	104	89	se.	
12	38.46	10.75	Aug.	0.32	Nov.	37.0	83	153	73	139	nw.	
9	41.05	7.63	June	0.41	Nov.	30.2	88	145	170	50	se.	
2	39.85	7.86	June	0.23	Nov.		68				nw.	
		4.04	Oct.	0.34	Dec.						nw.	
13	32.79	6.18	April	0.35	Nov.	29.0	85				nw.	
23	35.00	6.11	Sept.	0.54	Jan.	28.5	88	224	53	88	s.	
19	29.16	5.12	Sept.	0.47	Jan.	22.7	87	129	133	103	s.	
1	34.24	4.86	June	0.11	Nov.	42.4	89	191	68	111	sw.	
36	27.59	5.30	June	0.52	Nov.	29.2	97	96	112	157	s.	
19	29.42	4.61	Oct.	0.60	Jan.	24.0	83	178	73	114	nw.	
15	31.72	6.07	April	0.49	Nov.	28.2	73	198	77	96	s.	
16	33.26	6.80	June	0.49	Nov.	35.5	93	146	144	75	nw.	
12	36.67	8.22	Sept.	0.52	Jan.	27.3	89	187	68	110	nw.	
20	31.49	5.54	April	0.80	Jan.	20.9	67	182	96	87	nw.	
				0.45	Jan.						s.	
23	34.10	6.84	Sept.	0.40	Nov.	36.4	93	215	95	55	s.	
14	33.45	9.09	June	0.56	Dec.	34.3	92	154	108	108	se.	
				0.00	Nov.	14.5					s.	
15	26.77	5.08	June	0.48	Nov.	27.0	87	201	83	81	nw.	
23	29.76	5.27	Sept.	0.37	Jan.	23.2	88	178	99	88	s.	
17	39.25	7.51	July	0.61	Nov.	35.3	87	106	134	126	se.	
13	31.71	7.77	Sept.	0.49	Dec.		87	183	90	92	sw.	
31	27.30	5.10	April	0.42	Jan.		79				se.	
13	30.77	6.97	July	0.07	Nov.	35.5	73	212	31	122	nw.	
16	30.46	5.89	April	T.	Nov.	24.1	65	154	117	94	se.	
17	30.86	5.92	April	0.05	Nov.		96	196	96	83	s.	
21	23.19	3.40	May	0.34	Nov.	25.0	79					
27	34.06	7.60	Sept.	0.28	Nov.	33.7	101	124	121	120	s.	
29	31.79	8.65	Sept.	0.35	Jan.	35.5	53	168	132	65	s.	
12	29.09	7.75	Sept.	0.20	Jan.	17.5	62	187	136	43	se.	
11	27.02	4.74	Aug.	0.40	Dec.	23.8	81	226	60	79	s.	
2	24.83	4.04	Sept.	0.01	Jan.		57	112	161	92	s.	
16	37.11	8.70	Sept.	0.15	Nov.	30.7	72	176	112	77	se.	
22	22.28	4.44	April	0.05	Nov.	19.0	62	171	62	122		
28	30.53	9.19	June	0.28	Jan.	34.5	61	208	64	98	sw.	
14	29.61	6.93	Sept.	0.63	Nov.	48.7	80	205	79	81	nw.	
21	32.19	7.88	July	0.29	Jan.		87	165	123	77		
16	26.79	5.25	April	0.22	Nov.	30.8	80	204	72	89	nw.	
11	32.60	6.62	June	0.43	Nov.	20.0	69					
12	33.62	9.35	April	0.22	Feb.	14.1	69	226	82	57	nw.	
31	30.28	8.88	April	0.34	Feb.	25.5		180	90	95	s.	
12	29.83	7.17	April	0.49	Jan.	23.7	65				nw.	
12	23.29	4.05	Aug.	0.37	Jan.	27.2	64	171	76	118	nw.	
		5.50	July	0.28	Nov.			162	72	131	s.	
		5.84	April								s.	
17	25.91	6.11	April	0.46	Feb.	40.5	63	153	130	82	se.	
12	27.12	6.55	April	0.25	Jan.	19.0	64	209	77	79	nw.	
18	27.90	6.41	April	0.40	Feb.	18.4	65	171	117	77	n.	
4	28.50	5.91	Aug.	0.20	Feb.	57.0	81				nw.	
29	29.70	6.39	April	0.51	Jan.	24.1	107	173	129	68	nw.	
12	28.75	6.17	April	0.46	Jan.	19.3	67	211	83	71	ne.	

*Climatological Data for*

STATIONS	COUNTIES	Elevation	TEMPERATURE (DEGREES FAHRENHEIT)					
			Length of record, years	Annual mean	Highest	Date	Lowest	Date
SOUTHWESTERN SEC.								
Alma .....	Harlan .....	1989	9	50.9	97	† June 30	-14	Mar. 17
Beaver City .....	Furnas .....	2147	15	52.3	103	Aug. 21	-7	Mar. 17
Culbertson .....	Hitchcock .....	2556	.....	.....	100	† July 18	-8	Mar. 17
Franklin .....	Franklin .....	1817	.....	.....	100	† Aug. 19	-4	Feb. 5
Grant .....	Perkins .....	3405	2	49.1	100	July 22	-11	Mar. 17
Hastings § .....	Adams .....	1932	14	51.3	98	† June 13	-8	Feb. 14
Hayes Center .....	Hayes .....	.....	1	50.3	102	Aug. 1	-6	Feb. 5
Holbrook .....	Furnas .....	.....	1	49.6	97	† June 16	-10	Mar. 20
Holdrege .....	Phelps .....	2324	12	51.3	96	† Aug. 19	-9	Mar. 17
Imperial .....	Chase .....	3278	16	49.2	100	June 14	-12	Mar. 17
Minden .....	Kearney .....	2162	23	49.9	99	June 17	-9	Mar. 17
WESTERN SEC.								
Bridgeport .....	Cheyenne .....	.....	9	47.4	96	† Aug. 18	-20	Mar. 16
Halsey * .....	Thomas .....	.....	3	48.3	96	Sept. 7	-15	Mar. 16
Kimball .....	Kimball .....	4697	.....	.....	91	† June 16	-11	Mar. 16
North Platte .....	Lincoln .....	2621	32	49.0	97	Sept. 7	-8	Mar. 17
NORTHWESTERN SEC.								
Agate .....	Sioux .....	.....	4	44.0	95	June 16	-23	Mar. 16
Ainsworth .....	Brown .....	2521	.....	.....	.....	.....	-20	Mar. 16
Alliance .....	Box Butte .....	3963	.....	.....	99	Aug. 19	-20	Mar. 16
Fort Robinson .....	Dawes .....	3764	23	45.5	98	July 21	-25	Mar. 15
Hay Springs .....	Sheridan .....	3821	20	45.8	99	July 21	-23	Mar. 16
Kennedy .....	Cherry .....	.....	15	47.7	96	Sept. 7	-17	Mar. 16
Kirkwood .....	Rock .....	.....	11	47.6	102	† Sept. 7	-20	Jan. 8
Springview .....	Keya Paha .....	.....	14	47.3	100	July 21	-14	† Jan. 22
Valentine .....	Cherry .....	2595	18	46.5	99	Sept. 7	-18	† Jan. 22
Sioux City, Iowa .....	Woodbury .....	1135	17	47.8	96	Aug. 16	-14	Feb. 14
Yankton, S. Dak. ....	Yankton .....	1234	32	47.3	99	Aug. 16	-14	Feb. 10

\* Temperature data from thermometers not property of Weather Bureau, but of standard pattern.

† Occurred on more than one day.

§ Temperature data from three daily observations 7 a. m., 2 p. m., and 9 p. m., and from reliable thermometers not property of Weather Bureau.

All records are used in determining State (or district) means, but the mean departures from normal temperature and precipitation are based only on records from stations that have ten or more years of observation.

*the Year 1906—Concluded.*

Length of record, years	PRECIPITATION, IN INCHES						Number rainy days	SKY			Prevailing direction of wind
	Total for the year	Greatest monthly	Month	Least monthly	Month	Total snowfall		Number clear days	Number partly cloudy days	Number cloudy days	
9	23.15	6.86	Aug.	0.17	Jan.		72				
15	24.22	5.51	April	0.33	Jan.	20.1	67	201	77	87	se.
19	17.79	3.48	April	0.32	Jan.	49.3	63	278	55	82	s.
3	23.70	3.51	June	0.10	Nov.						s.
16	23.47	3.52	April	0.15	Jan.	44.5	61				nw.
13	26.93	7.75	April	0.15	Nov.	48.5	59	197	116	52	nw.
5	26.62	5.79	Aug.	0.40	Feb.		55				se.
14	30.76	7.90	April	0.31	Jan.	22.8	63	194	106	66	se.
16	26.83	5.97	April	0.30	Jan.	30.0	49	196	96	73	se.
29	23.17	4.28	April	0.45	Dec.	78.7	75				se.
			April	0.40	Jan.	28.7	93	161	110	94	s.
10	16.97	3.20	March	T.	†Jan.	52.0	56	184	135	46	nw.
		6.37	April	0.17	Feb.		77	126	180	59	nw.
		3.86	May								nw.
32	27.99	5.56	Aug.	0.61	Jan.	51.1	102	185	94	86	se.
7	18.69	3.24	June	0.23	Feb.	38.8	80	207	96	62	nw.
1	28.36	6.29	Aug.	0.06	Feb.	61.1	75				sw.
11	22.87	3.88	June	T.	Feb.		53	159	138	68	nw.
22	23.52	3.94	May	0.32	Nov.	47.3	88	211	51	103	sw.
19	23.26	3.42	Aug.	0.35	Jan.	48.5	68	151	146	68	nw.
16	26.99	4.82	Aug.	0.25	Feb.	86.0	77				nw.
11	25.89	5.46	Aug.	0.35	Feb.		73				nw.
		6.38	Aug.								nw.
18	26.54	5.02	Aug.	0.33	Feb.	63.4	101	147	145	73	nw.
17	31.41	8.06	Sept.	0.50	Jan.	29.8	96	116	101	148	nw.
32	33.21	8.16	Aug.	0.47	Feb.	26.3	99	100	74	191	nw.

† Occurred in more than one month.

T. Trace (when precipitation is less than 0.01 of an inch).

\*, †, ‡, etc., indicate number of days missing from observed readings.

## Monthly and Annual Temperature for the Year

STATIONS	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure
<b>NORTHEASTERN SEC.</b>												
Agee†	b22.3	+3.4	a22.2	+3.1	22.4	-8.5					65.7	-3.1
Atkinson											64.8	
Belevue	d31.1		30.4		29.4		55.0		62.8		70.0	
Blair	29.0	+6.1	28.1	+9.2	28.0	-6.9	55.2	+5.5	62.7	+1.6	69.8	+0.8
Bloomfield	27.1		25.7		25.6		52.4		59.7		67.7	
Clearwater	27.0		25.6		24.4		52.0		61.2		68.6	
Columbus	27.6	+3.9	25.8	+4.1	25.0	-10.0	62.6	+2.0	61.0	-0.3	67.0	-2.0
Fremont	29.0	+10.2	27.0	-6.1	27.6	-6.8	53.6	+3.2	62.5	+2.3	69.6	-1.7
Hartington	28.2	-7.8	24.6	-7.1	25.0	-5.6	49.0	+1.6	60.4	+1.8	68.8	-0.7
Hoop††	26.6	+3.8	23.9	+4.6	26.5	-8.2	52.8	+3.1	62.0	-0.1	69.0	-1.2
Leavitt*	b29.4		26.5		23.4		53.2		60.8		69.6	
Lynch	27.6	+6.3			26.2	-5.6	51.2	+4.4	62.4	+1.7	67.4	-1.9
Madison	a28.2	+4.7	a26.0	+5.0	a25.8	-7.1	51.5	-2.6	60.6	+0.9	68.4	-1.4
No folk	27.3	-8.7	25.9	-5.6	25.5	-6.7	52.6	+4.7	61.1	+1.6	68.9	-1.3
Oakdale	25.9	+7.0	23.6	+4.7	23.9	-7.6	50.6	+1.5	60.6	+1.7	66.4	-2.1
Oakland	8.0		26.8		27.6		52.7		61.0		69.4	
Omaha	30.2	+11.0	28.4	+3.4	28.6	-0.9	54.4	+4.4	63.0	+1.3	70.5	-1.0
Santee	28.0	+9.6	25.5	-7.0	26.8	-6.2	55.1	-6.0	63.0	+1.3	67.9	-3.1
Stanton	29.4	+8.9	25.6	-6.1	27.4	-5.8	53.2	-3.9	62.2	+1.9	68.5	-0.3
Tekamah	28.2	-6.0	28.1	+4.7	28.9	-7.1	55.2	-3.4	62.3	+0.9	68.3	-1.8
Wakefield	26.7	+5.0	24.2	-6.6	30.8	-3.4	51.6	-3.4	60.4	+0.6	66.6	-2.1
West Point			b27.8	+7.3	29.8	-6.0	54.7	+4.2	61.8	+0.2	68.6	-1.6
Winnebago	28.4		b24.0		26.6		51.6					
<b>SOUTHEASTERN SEC.</b>												
Ashland	30.8	+7.2	29.6	+6.4	28.8	-8.6	55.4	+2.6	63.4	+0.2	70.6	-1.2
Auburn	31.4	+8.2	32.0	+7.1	29.2	-9.0	54.0	+0.9	62.2	-0.4	68.6	-2.8
Aurora	32.5	+6.2	31.0	-6.7	27.6	-7.7			61.2	-0.9	69.6	-1.5
Beatrice	30.8	+5.9	32.0	+7.5	29.8	-7.5	59.0	+3.9	63.6	+1.9	71.1	-0.2
Crete	31.1	+9.7	31.4	+7.8	28.2	-7.7	56.0	-3.9	63.5	+2.3	70.4	0.0
David City	29.4	+8.0	29.2	+8.2	26.7	-5.9	53.4	-3.7	61.4	+2.4	67.6	-1.3
Dawson	32.1	+3.9	33.4	+8.7	29.8	-10.3	59.8	-5.2	65.7	+1.8	72.0	-0.8
Fairbury	30.1	+3.7	29.9	+5.4	28.2	-10.3	55.4	+3.4	63.4	+0.8	70.5	-0.2
Fairmont	28.1	+3.5	28.0	+5.9	24.6	-11.2	52.9	-2.3	61.0	-2.0	67.4	-2.1
Geneva	31.0	+6.3	31.8	+8.2	27.2	-9.7	55.2	-2.5	62.8	+0.3	69.4	-1.9
Harvard	29.8	+5.5	29.2	+6.8	25.7	-9.2	52.1	-1.7	60.4	-0.1	66.5	-3.1
Hebron	31.0	+7.2	31.8	+4.3	23.6	-8.8	55.0	-1.6	62.4	+0.2	69.4	-2.0
Lincoln	31.0	+8.9	30.5	+5.3	28.6	-7.5	55.6	-4.6	63.4	+1.9	70.4	-0.4
Nebraska City	31.8	+12.0			d27.2	-9.3	56.6	-3.8	63.8	+1.5	70.4	0.4
Palmyra†	30.4	+6.3	31.8	+11.1	23.4	-7.5	55.0	+3.8	64.0	+1.2	71.6	+0.9
Pawnee City			32.8		29.2		56.3		63.2		70.3	
Plymouth	33.5		36.6						64.6		70.4	
Seward	28.8	+3.4	28.6	+4.1	27.8	-9.5	53.7	+1.0	62.0	0.0	70.0	-2.4
Superior	30.4	+5.8	30.8	+7.2	26.6	-9.9	55.7	+3.2	a64.6	+2.0		
Tecumseh	31.0	+6.9	30.9	+6.6	a29.3	-8.1	e65.1	-1.9	b62.8	0.0	70.1	-3.3
Turlington	30.1	+6.2	29.6	+7.0	27.0	-8.6	55.4	-3.2	63.0	+0.7	70.6	-0.8
University Farm*	31.2	+6.5	31.6	+8.3	28.4	-11.4	56.0	+4.5	63.2	+0.4	70.0	+0.9
York	30.5	+4.6	30.2	+6.2	26.3	-11.2	a53.4	+0.3	62.0	-0.1	68.2	-4.8
<b>CENTRAL SEC.</b>												
Albion	a26.8	+3.4	27.2	+5.1	b25.4	-9.1	a51.6	+1.6	60.0	-0.5	64.8	-3.2
Broken Bow	30.6	+5.1	30.6	+6.2	25.4	-9.2	51.4	-2.7	60.1	-0.7	65.2	-4.3
Callaway	31.2	+6.4	30.6	+7.6	26.0	-8.7	52.8	+4.5	60.4	+1.5	65.1	-2.6
Genoa	29.3	+10.0	28.5	+6.6	28.4	-7.1	54.6	+4.8	62.2	+1.8	68.6	-1.3
Gothenburg	32.0	+6.7	30.6	+6.6	28.8	-9.1	a54.1	-2.9	62.0	-1.4	68.5	-2.3
Grand Island	31.9	+7.1	29.4	+5.9	27.4	-7.7	54.3	+3.5	62.6	+1.3	71.1	+0.4
Kearney	32.8	+7.0	31.0	+7.7	27.2	-8.6	54.4	+2.8	62.3	+0.8	68.6	-2.5
Lexington	31.0	+5.6	29.0	+4.2	25.4	-10.5	52.2	-2.0	60.9	+1.7	66.0	-1.7
Loup City	29.2	+4.2	29.2	+6.3	24.0	-10.4	52.3	+2.6	61.6	+1.0	67.0	-1.5
North Loup	29.8	+7.8	28.0	+5.5	23.6	-9.2	53.4	+3.3	62.0	+2.4	67.6	-1.3
Purdum	28.8		28.4				50.1		59.0	+1.3	64.9	0.5
Ravenna	30.6	+6.3	30.0	+7.0	25.5	-9.5	53.2	+2.6	61.8	+2.3	67.0	-1.8
St. Paul	30.6	+3.8	30.4	+5.8	27.2	-9.0	54.1	+3.2	62.6	+0.4	68.4	-1.9

1906, with Departures from the Normal.

JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		ANNUAL	
Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure
70.4	-3.8	71.2	.....	62.0	-1.1	48.6	.....	33.4	.....	27.0	.....	.....	.....
70.0	.....	75.2	.....	63.1	.....	53.0	.....	33.6	.....	30.4	.....	51.5	.....
72.1	.....	74.2	+0.9	66.5	+2.5	50.4	-3.2	37.2	-1.4	28.7	+3.8	50.1	+1.4
a71.2	-2.7	74.0	.....	a61.2	.....	49.0	.....	31.0	.....	24.5	.....	47.9	.....
70.6	.....	73.9	.....	64.6	.....	48.9	.....	.....	.....	.....	.....	.....	.....
69.2	.....	73.6	-1.0	65.8	+1.6	43.6	-3.8	35.5	-1.2	28.1	-1.3	48.4	-0.6
69.8	-3.3	73.8	-1.1	67.0	+2.2	50.4	-2.1	36.5	+0.3	27.8	-2.4	49.6	+1.1
70.8	-4.0	72.8	-1.8	64.0	+1.5	49.8	-1.1	33.6	+0.5	25.8	-2.4	47.4	+1.2
70.2	-2.6	73.7	-0.4	65.2	+2.3	48.8	-3.2	36.0	-1.0	27.7	-3.4	48.7	+0.1
71.8	-2.5	a75.5	.....	67.0	.....	a50.4	.....	33.7	.....	28.4	.....	49.9	.....
72.7	.....	73.8	-0.8	65.8	+1.8	49.2	-1.8	32.2	+4.4	29.6	+4.6	.....	.....
70.6	-3.3	72.6	-0.6	64.7	+1.5	a49.5	-1.3	36.8	+1.2	a28.8	+3.4	48.4	+0.6
70.0	-3.0	73.5	-1.3	64.6	+1.3	48.9	-1.7	34.1	+0.9	27.5	-3.6	48.2	+1.3
70.6	-2.8	73.0	-1.2	63.0	+0.4	47.5	-2.1	31.0	+0.4	25.3	0.0	47.0	+0.2
70.3	-3.0	73.4	.....	65.1	.....	49.4	.....	34.4	.....	28.4	.....	48.9	.....
69.3	.....	75.8	-2.1	68.7	+3.9	52.8	-0.1	38.0	+1.4	29.0	-2.3	51.1	+1.5
72.6	-3.6	74.3	-0.2	66.7	+1.8	51.6	-0.4	35.8	-1.7	27.6	-4.6	49.6	+1.6
72.0	-3.7	74.2	-2.3	67.5	+3.6	51.6	-0.1	34.5	-0.5	26.4	-2.2	49.3	+1.7
70.8	-2.1	74.6	+1.5	67.0	+1.5	50.4	-3.2	36.3	-0.9	26.8	-0.8	49.6	+0.2
71.2	-3.8	72.5	-0.6	64.6	+1.0	49.2	-3.1	35.0	-1.6	26.2	+3.2	48.0	+0.6
69.4	-3.4	73.9	0.0	66.6	+0.8	50.6	-4.0	35.8	-2.7	27.7	-3.0	.....	.....
72.0	-2.8	71.7	.....	64.9	.....	47.8	.....	34.0	.....	26.2	.....	.....	.....
k67.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
71.8	-4.6	75.4	+0.6	68.6	+1.6	a53.4	-1.7	38.6	0.0	31.0	+3.9	51.4	+0.5
70.7	-5.1	74.8	-0.3	67.2	+1.0	53.5	-2.5	38.8	-1.5	32.0	-2.2	51.2	-0.4
72.0	-4.1	75.9	-0.5	68.2	+1.5	54.4	+1.0	38.2	+0.3	31.6	+3.2	.....	.....
73.2	-2.9	76.3	-1.4	68.1	+1.0	52.4	-0.6	39.2	+0.3	32.3	-3.6	52.1	+1.0
72.5	-2.8	75.8	-2.4	68.8	+2.8	53.3	-0.5	38.6	+0.4	31.4	-3.5	51.8	+1.9
69.4	-3.7	72.5	-1.3	65.9	-2.5	51.1	+0.4	37.3	+2.3	29.5	-2.9	49.4	-1.7
73.6	-3.4	77.8	-1.1	70.4	+1.5	54.0	-3.8	39.8	-2.8	32.8	-4.0	53.4	-0.4
74.0	-2.2	77.6	-2.2	69.2	-2.4	53.6	-1.3	39.4	+0.3	34.4	-5.9	52.1	-0.8
69.8	-4.9	73.1	-0.5	65.2	-0.4	48.9	-4.1	36.3	-1.1	28.8	-1.0	48.7	+1.1
71.4	-4.2	75.0	+0.5	67.2	+1.7	52.0	-2.0	36.6	+0.6	32.0	-3.5	51.1	-0.5
69.6	-4.9	72.2	-1.3	61.7	-0.2	48.3	-3.9	35.8	-0.5	29.0	-1.9	48.6	-0.6
73.0	-3.0	76.2	-1.6	a67.6	+0.9	a51.5	-2.7	a38.2	-0.6	a30.1	+0.2	51.2	+0.1
72.4	-3.6	76.2	-2.3	68.2	+3.0	52.6	-1.1	38.4	+0.9	30.5	-3.0	51.5	+1.5
b71.1	-4.8	75.2	-1.1	68.6	+2.4	52.4	-1.1	38.4	-0.1	31.6	-4.5	.....	.....
71.9	-2.9	75.4	+1.3	67.9	+2.9	52.0	-1.1	38.6	-0.5	30.6	-3.6	51.5	+1.5
71.7	.....	75.8	.....	68.7	.....	52.9	.....	38.7	.....	32.2	.....	51.8	.....
72.6	.....	76.0	.....	68.4	.....	53.3	.....	38.6	.....	32.4	.....	.....	.....
72.4	-4.3	75.4	+0.1	67.6	+0.7	.....	.....	38.4	-0.1	30.0	+1.2	.....	.....
a73.4	-4.0	76.0	-0.8	68.0	+0.3	54.4	0.0	40.1	+0.5	32.8	-2.1	.....	.....
a72.0	-5.4	75.6	-0.8	a68.0	+1.1	52.2	-2.7	41.7	-2.2	35.0	-4.0	51.8	+0.4
71.7	-4.4	75.2	-0.3	68.5	+1.5	52.0	-2.8	38.0	-0.1	30.3	-3.6	51.0	+0.5
71.9	-1.8	74.9	-1.1	68.0	-2.2	52.4	-2.3	38.6	-2.7	31.1	-3.0	51.4	+0.7
70.2	-6.7	74.6	-1.0	67.4	+0.9	51.3	-2.7	36.9	-0.8	30.2	-1.7	50.1	-1.1
68.0	-4.5	f70.1	-1.4	.....	.....	48.4	-1.8	d35.7	+0.3	k26.6	+4.1	.....	.....
68.0	-5.4	71.0	-1.3	63.0	+0.2	51.0	+0.8	b38.4	-0.2	31.5	-3.1	48.4	-0.5
71.6	-3.3	b73.9	0.0	64.4	+0.3	a50.8	0.0	36.4	+2.2	31.9	+4.3	49.4	+1.2
70.6	-3.4	a72.4	-0.8	66.0	-2.0	49.2	-2.6	37.4	-0.6	33.7	-2.4	49.5	+1.4
72.4	-2.7	75.4	+1.7	67.0	+2.0	51.7	-0.9	38.0	+1.2	30.8	+4.4	50.1	+0.4
a71.8	-4.4	73.4	-2.2	67.2	-0.1	50.7	-3.1	.....	.....	.....	+1.2	51.0	+1.1
68.8	-3.4	72.0	-0.3	63.4	+0.1	47.7	-4.4	35.4	-1.5	31.4	+2.6	48.6	-0.4
69.8	-3.6	71.8	-1.2	64.2	-0.6	47.8	-3.5	35.9	-0.7	29.2	+2.0	48.5	-0.4
70.1	-3.7	a71.0	-1.1	64.1	-0.2	48.8	-2.6	a35.4	-0.4	28.8	+1.3	48.6	+0.1
a70.0	-0.4	71.4	+0.1	63.5	+1.8	47.4	-3.3	34.6	-3.4	31.0	+3.6	47.7	.....
69.8	-4.0	73.0	+0.1	64.9	-0.2	49.6	-2.4	36.4	-0.3	30.3	+1.5	49.3	+0.2
70.5	-4.5	74.4	-0.3	66.6	-0.8	50.8	-2.6	37.9	-0.4	30.4	+1.6	50.3	-0.3



*Monthly and Annual Temperature for the Year 1906,*

STATIONS	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure
<b>SOUTHWESTERN SEC.</b>												
Alma .....	31.8	+4.2	31.6	+6.9	28.2	-10.7	55.3	+3.6	63.6	+1.4	68.7	-2.5
Beaver City .....	34.1	+5.4	33.4	+6.6	29.9	-9.1	a55.9	+4.2	63.5	+0.9	70.3	-0.5
Culbertson .....	33.2	.....	34.3	.....	30.8	.....	56.8	.....	62.6	.....	69.4	.....
Curtis .....	29.4	+2.0	28.2	+3.0	.....	.....	.....	.....	c61.4	-0.8	67.6	-2.2
Franklin .....	.....	.....	32.2	+7.2	d30.4	-6.6	c57.8	+5.8	.....	.....	168.4	-2.1
Grant .....	33.3	.....	a32.7	.....	a25.7	.....	c52.3	.....	a60.4	.....	b65.8	.....
Hastings † .....	31.0	+6.0	30.0	+6.0	26.9	-8.6	54.6	+4.1	63.7	+2.6	72.1	+1.7
Hayes Center .....	a33.8	.....	33.1	.....	a26.2	.....	52.1	.....	60.0	.....	a66.0	.....
Holbrook .....	m33.5	.....	29.4	.....	25.7	.....	53.2	.....	61.8	.....	67.4	.....
Holdrege .....	32.8	+6.8	31.7	+5.9	26.4	-8.6	b56.2	+5.1	62.8	+1.2	69.8	-2.2
Imperial .....	32.6	+5.4	32.0	+5.8	25.2	-10.8	51.2	+1.7	a57.4	-1.9	64.7	-4.6
Minden .....	31.2	+9.0	30.4	+6.7	26.2	-9.3	52.8	+2.2	61.8	+1.5	67.8	-2.1
Red Cloud .....	31.0	+4.7	.....	.....	30.4	-7.9	57.5	+4.6	.....	.....	.....	.....
<b>WESTERN SEC.</b>												
Bridgeport .....	30.8	+4.6	29.9	+8.5	24.5	-10.8	49.8	+2.1	55.4	-1.5	63.4	-2.5
Gering .....	.....	.....	.....	.....	26.4	-6.7	50.1	+3.6	56.4	+0.7	63.2	-3.3
Halsey * .....	30.2	.....	29.2	.....	25.6	.....	51.6	.....	60.4	.....	65.4	.....
Kimball .....	30.0	+3.0	29.8	+3.9	25.1	-8.3	47.8	+1.7	55.1	-0.4	61.6	-3.7
Lodge Pole .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	62.0	-3.4
North Platte .....	32.6	+12.6	30.8	+5.4	26.2	-8.9	51.9	+3.3	59.5	+1.3	65.6	-2.3
<b>NORTHWESTERN SEC.</b>												
Agate .....	26.6	.....	28.8	.....	23.2	.....	45.1	.....	52.0	.....	59.2	.....
Ainsworth .....	28.8	.....	28.2	.....	23.4	.....	50.6	.....	60.0	.....	.....	.....
Alliance .....	26.9	+3.0	.....	.....	f24.2	-7.7	49.4	+3.3	56.1	0.0	a64.3	-2.1
Fort Robinson .....	b27.6	+4.2	27.2	+4.5	21.5	-11.6	c47.6	-0.9	53.6	-2.3	61.0	-4.4
Hay Springs .....	27.5	-7.4	27.8	-6.8	23.4	-7.1	48.2	-3.2	54.8	+0.1	62.0	-1.7
Kennedy .....	29.4	-6.0	a30.8	-8.2	f21.4	-11.1	b51.4	-4.3	159.0	+1.1	a64.6	-2.1
Kirkwood .....	27.0	-4.7	a27.2	-7.1	a24.2	-6.4	a51.3	-3.9	b68.8	-0.5	a64.4	-2.6
Springview .....	28.0	-7.3	130.0	-9.3	22.5	-9.6	50.4	-2.5	58.2	0.0	64.6	-2.4
Valentine .....	27.6	+10.7	26.4	+4.9	22.2	-9.0	49.5	+2.3	57.2	+1.4	64.1	-3.1
Sioux City, Iowa .....	26.4	+10.1	23.0	+4.0	26.2	-5.4	52.0	+1.4	60.6	+2.2	67.1	-3.2
Yankton, S. Dak. ....	25.6	+11.4	23.6	+4.4	24.6	-5.4	51.0	+4.3	60.4	+1.9	66.0	-2.6

\* Temperature data from thermometers not property of Weather Bureau, but of standard pattern.

† Temperature data from three daily observations, 7 a. m., 2 p. m., and 9 p. m.

a, b, c, etc., indicate number of days missing from record; a, 1 day; b, 2 days; c, 3 days, etc.

*with Departures from the Normal—Concluded.*

JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		ANNUAL	
Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure
70.7	-4.6	74.8	-1.1	66.0	+0.2	b49.7	-4.6	38.5	-1.5	32.2	+3.2	50.9	-0.5
72.4	-3.2	75.4	+0.1	67.6	+0.6	51.6	-2.7	39.4	-0.8	34.2	+2.8	52.3	+0.4
73.8	.....	75.1	.....	a63.0	.....	48.0	.....	.....	.....	33.2	.....	.....	.....
172.2	-3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
a71.7	-3.5	e74.9	-0.2	168.4	+2.0	b52.0	-1.1	40.0	+1.7	32.6	+2.8	.....	.....
68.4	.....	c70.0	.....	63.9	.....	a47.2	.....	a35.0	.....	a34.6	.....	49.1	.....
74.8	-0.6	75.6	+1.5	68.2	+3.0	52.0	-1.2	38.0	-0.3	28.8	+1.6	51.3	+1.3
71.2	.....	73.4	.....	a67.5	.....	50.6	.....	35.8	.....	34.4	.....	50.3	.....
71.6	.....	73.2	.....	64.4	.....	47.8	.....	35.8	.....	32.0	.....	49.6	.....
72.3	-4.0	74.4	-0.9	66.7	-0.8	51.8	-0.3	38.6	+1.2	32.2	+3.0	51.3	+0.5
68.8	-5.7	71.5	-2.4	64.8	0.0	d50.2	-1.1	36.6	-0.8	35.2	+5.8	49.2	-0.7
71.2	-3.8	74.1	+0.8	65.8	+1.2	49.4	-2.8	37.2	-0.3	30.8	+2.6	49.9	+0.5
.....	.....	.....	.....	g65.8	-0.4	52.1	-1.1	41.9	+3.6	a33.0	+4.8	.....	.....
67.8	-4.1	69.8	-2.7	61.2	-0.6	46.5	-2.2	35.8	-1.8	34.3	+6.6	47.4	-0.4
68.0	-4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
70.5	.....	71.9	.....	62.1	.....	47.4	.....	34.6	.....	30.8	.....	48.3	.....
67.1	-3.8	68.2	-2.9	59.2	-1.7	44.6	-3.4	.....	.....	.....	.....	.....	.....
65.3	-4.4	68.0	-2.4	c69.8	0.0	.....	.....	.....	.....	33.8	+5.9	.....	.....
69.6	-3.9	71.9	+0.5	64.0	+1.6	46.9	-2.9	35.9	+0.7	33.2	+6.1	49.0	+1.1
64.2	.....	65.0	.....	58.1	.....	43.8	.....	32.0	.....	30.8	.....	44.0	.....
71.2	.....	a71.7	.....	63.4	.....	46.4	.....	34.3	.....	29.0	.....	.....	.....
68.2	-3.7	70.7	-0.5	61.4	+0.8	45.5	-2.4	35.4	+1.3	33.9	+7.2	.....	.....
67.3	-4.1	68.4	-2.2	60.7	-0.5	a46.1	-2.5	33.4	-2.1	31.6	+3.1	45.5	-1.4
67.4	-3.1	67.3	-2.2	60.1	+0.5	46.2	-1.0	33.9	+1.0	30.4	+4.9	45.8	+0.7
a70.6	-2.1	70.0	-1.4	a62.7	+0.5	b46.9	-2.2	b34.4	+2.0	31.1	-2.4	47.7	+0.5
b70.1	-2.5	b72.0	+0.4	64.2	+1.8	a48.2	-1.3	35.4	+1.9	a28.4	+3.4	47.6	+0.8
71.4	-2.0	70.6	-1.2	62.8	-0.9	47.2	-3.1	33.8	+1.3	.....	.....	.....	.....
69.8	-3.5	70.2	-0.1	62.8	+1.2	46.2	-3.0	33.3	-1.0	28.6	+1.4	46.5	-1.2
70.4	-3.9	73.0	+1.4	65.4	+0.2	50.0	-1.0	34.5	+0.2	25.0	-2.8	47.8	+0.2
70.2	-3.4	72.8	+1.0	65.0	+2.9	49.7	0.0	34.4	+1.6	24.6	+2.1	47.3	+1.5

Monthly Maximum Temperatures for the Year 1906, with Dates.

STATIONS	January		Feb.		March		April		May		June		July		August		Sept.		October		Nov.		Dec.	
	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date
NORTHEASTERN SECTION																								
Ageet.....	57	29	64	19	86	28	90	24	85	11	94	28	98	26	98	16	102	8	85	12	65	4	57	2
Atkinson.....	57	29	64	22	83	31	80	24	85	11	94	16	90	21	98	16	99	9	85	12	65	4	57	2
Bellevue.....	60	26	65	22	84	26	90	24	89	11	97	22	98	25	102	16	102	9	85	12	65	4	57	2
Blair.....	64	26	64	26	84	26	90	24	89	11	97	22	98	25	102	16	102	9	85	12	65	4	57	2
Bloomfield.....	65	31	63	22	86	28	90	24	94	16	96	16	98	25	102	16	101	8	86	7	67	5	57	28
Clearwater.....	65	31	63	22	86	28	90	24	94	16	96	16	98	25	102	16	101	8	86	7	67	5	57	28
Columbus.....	60	29	63	22	84	1	90	24	94	16	96	16	98	25	102	16	101	8	86	7	67	5	57	28
Fremont.....	58	30	65	22	82	30	88	24	96	11	98	16	94	27	97	17	96	8	81	7	67	5	57	28
Hartington.....	56	29	60	22	88	1	90	24	96	11	98	16	94	27	97	17	96	8	81	7	67	5	57	28
Hooper.....	62	31	66	22	86	1	90	24	96	11	98	16	94	27	97	17	96	8	81	7	67	5	57	28
Leavitt.....	65	29	66	22	80	1	94	24	97	11	99	28	98	20	104	16	103	7	84	9	68	6	52	23
Lynch.....	60	31	67	22	83	30	89	24	94	16	96	16	92	25	96	16	96	10	80	8	67	6	52	23
Madison.....	63	31	67	22	86	1	90	24	94	16	96	16	92	25	96	16	96	10	80	8	67	6	52	23
Norfolk.....	62	31	64	22	86	30	89	24	94	16	96	16	92	25	96	16	96	10	80	8	67	6	52	23
Oakdale.....	61	29	61	22	86	30	89	24	94	16	96	16	92	25	96	16	96	10	80	8	67	6	52	23
Oakland.....	58	29	64	22	83	30	89	24	94	16	96	16	92	25	96	16	96	10	80	8	67	6	52	23
Omaha.....	64	31	66	19	88	29	93	24	89	11	96	17	91	11	99	16	101	8	86	8	67	5	57	28
Santee.....	62	31	66	22	88	31	91	24	89	11	96	17	91	11	99	16	101	8	86	8	67	5	57	28
Stanton.....	62	31	64	22	88	31	91	24	89	11	96	17	91	11	99	16	101	8	86	8	67	5	57	28
Tekamah.....	62	31	64	22	88	31	91	24	89	11	96	17	91	11	99	16	101	8	86	8	67	5	57	28
Wakarusa.....	62	31	64	22	88	31	91	24	89	11	96	17	91	11	99	16	101	8	86	8	67	5	57	28
West Point.....	62	31	60	22	87	1	89	24	89	11	96	16	92	27	96	16	96	8	82	7	65	6	54	28
Winnipeg.....	63	31	60	22	86	1	84	24	87	11	96	15	90	9	98	16	97	8	80	7	68	6	54	28
SOUTHEASTERN SECTION																								
Ashland.....	60	29	66	22	86	1	91	24	86	11	99	16	90	21	98	16	98	8	84	7	70	5	55	28
Auburn.....	59	31	67	22	87	1	90	24	87	11	98	16	90	21	98	16	98	8	84	7	70	5	55	28
Aurora.....	59	31	67	22	87	1	90	24	87	11	98	16	90	21	98	16	98	8	84	7	70	5	55	28
Beatrice.....	62	31	69	22	87	1	90	24	89	24	96	16	94	27	96	16	96	8	81	7	70	5	55	28
Crete.....	60	31	69	22	87	1	90	24	89	24	96	16	94	27	96	16	96	8	81	7	70	5	55	28
David City.....	60	31	69	22	87	1	90	24	89	24	96	16	94	27	96	16	96	8	81	7	70	5	55	28
Dawson.....	60	31	69	22	87	1	90	24	89	24	96	16	94	27	96	16	96	8	81	7	70	5	55	28
Fairbury.....	65	31	71	22	88	1	92	24	86	16	102	16	99	2	103	16	100	8	87	7	75	6	63	13
Farmington.....	65	31	71	22	88	1	92	24	86	16	102	16	99	2	103	16	100	8	87	7	75	6	63	13
Geneva.....	66	31	64	22	88	1	90	24	87	16	96	16	97	17	97	16	99	8	85	8	72	6	60	4
Harvard.....	66	31	65	22	88	1	90	24	87	16	96	16	97	17	97	16	99	8	85	8	72	6	60	4
Hebron.....	63	31	67	22	89	1	87	24	86	11	96	16	97	17	97	16	99	8	85	8	72	6	60	4

Lilcoln.....	61	31	67	23	66	1	90	34	66	11	97	17	90	27	98	16	97	8	84	7	71	6	57	28
Nebraska City.....	58	31	68	23	66	30	90	24	84	21	96	16	90	27	98	16	96	8	82	7	72	6	57	28
Palmyra.....	62	28	68	23	66	1	90	24	84	21	96	16	90	27	98	16	96	8	82	7	72	6	57	28
Pawnee City.....	60	31	69	22	67	1	90	24	85	11	97	16	94	21	98	16	96	8	83	7	73	6	58	12
Plymouth.....	61	29	67	22	67	1	90	23	84	11	96	17	93	21	98	16	96	8	84	7	72	6	58	12
Seward.....	62	31	67	22	65	1	95	24	89	12	96	15	96	20	98	18	100	8	91	6	72	13	60	29
Superior.....	62	31	66	28	69	1	95	23	89	12	96	15	96	20	98	18	100	8	91	6	72	13	60	29
Teconeseh.....	59	31	68	23	68	1	91	24	88	11	96	16	94	21	101	16	98	8	88	2	75	5	55	4
Turlington.....	60	29	65	22	65	1	91	24	88	11	97	16	91	21	100	17	96	8	82	7	71	5	54	5
University Farm*.....	61	29	67	22	66	1	89	24	85	11	97	17	90	17	98	16	96	8	84	7	70	5	57	28
York.....	63	31	65	22	66	1	88	23	85	16	96	17	96	10	97	17	97	8	85	7	67	5	58	28
CENTRAL SECTION																								
Albion.....	62	31	66	22	65	7	77	24	87	16	98	17	89	25	93	16	93	8	87	12	68	8	56	2
Broken Bow.....	65	31	64	21	61	59	91	23	92	16	94	15	93	25	93	16	93	8	87	12	68	8	56	2
Callaway.....	65	31	64	21	61	59	91	23	92	16	94	15	93	25	93	16	93	8	87	12	68	8	56	2
Genoa.....	65	31	64	22	67	7	89	24	88	16	94	16	94	18	94	16	94	8	83	7	67	8	54	28
Gothenburg.....	65	31	66	28	64	30	91	23	92	16	94	16	94	18	94	16	94	8	83	7	67	8	54	28
Grand Island.....	65	31	66	28	64	30	91	23	92	16	94	16	94	18	94	16	94	8	83	7	67	8	54	28
Kearney.....	65	31	65	28	62	7	89	23	89	16	94	15	92	20	93	16	93	8	87	12	70	8	55	2
Lexington.....	65	31	67	28	68	7	89	23	89	16	94	15	92	20	93	16	93	8	87	12	70	8	55	2
Long City.....	65	31	67	28	68	7	89	23	89	16	94	15	92	20	93	16	93	8	87	12	70	8	55	2
North Loup.....	65	31	67	28	68	7	89	23	89	16	94	15	92	20	93	16	93	8	87	12	70	8	55	2
Pardun.....	63	18	60	26	58	30	94	23	92	16	96	16	93	25	95	16	93	8	87	12	70	8	55	2
Ravenna.....	63	31	64	22	62	7	86	23	92	16	93	16	93	25	95	16	93	8	87	12	70	8	55	2
St. Paul.....	65	31	65	22	60	7	90	24	91	16	93	16	93	25	95	16	93	8	87	12	70	8	55	2
SOUTHWESTERN SECTION																								
Alma.....	67	31	66	19	64	1	92	23	94	16	97	30	83	31	97	23	96	8	90	12	75	8	60	13
Beaver City.....	67	31	73	28	73	1	94	24	95	29	97	115	92	180	108	21	100	8	90	12	75	8	60	13
Culbertson.....	65	31	62	21	69	1	92	23	90	12	97	29	97	21	100	19	99	8	85	2	70	5	60	25
Curtis.....	65	31	62	21	69	1	92	23	90	12	97	29	97	21	100	19	99	8	85	2	70	5	60	25
Franklin.....	67	31	70	28	67	1	90	23	92	16	97	30	83	31	97	23	96	8	90	12	75	8	60	13
Grant.....	68	17	67	119	65	29	93	23	92	16	97	30	83	31	97	23	96	8	90	12	75	8	60	13
Hastings.....	64	26	64	22	61	1	88	23	94	16	96	113	90	1	96	9	90	8	83	7	69	8	55	12
Hayes Center.....	68	19	72	21	66	28	90	23	90	12	96	113	90	1	96	9	90	8	83	7	69	8	55	12
Holbrook.....	67	31	66	28	63	7	89	23	94	16	96	113	90	1	96	9	90	8	83	7	69	8	55	12
Holdrege.....	66	31	66	28	63	7	89	23	94	16	96	113	90	1	96	9	90	8	83	7	69	8	55	12
Imperial.....	65	119	71	21	63	30	90	23	98	16	100	14	99	21	96	119	98	8	89	12	70	8	59	23
Minden.....	65	31	66	28	61	7	90	23	91	16	99	17	95	18	98	29	96	8	88	13	72	8	59	23
Red Cloud.....	65	29	67	19	74	1	91	23	91	16	99	17	95	18	98	29	96	8	88	13	72	8	59	23
WESTERN SECTION																								
Bridgeport.....	65	119	67	27	70	31	87	23	82	11	90	16	95	121	96	118	94	7	98	3	78	13	65	13
Gering.....	63	26	70	19	61	30	86	23	83	11	95	18	97	126	97	16	96	7	92	12	68	8	64	3
Halley.....	61	31	65	119	67	31	81	21	86	9	91	18	90	120	91	19	90	7	84	3	68	8	64	3
Kimball.....	61	31	65	119	67	31	81	21	86	9	91	18	90	120	91	19	90	7	84	3	68	8	64	3
Lodge Pole.....	66	31	69	19	62	30	90	23	90	16	95	18	97	126	97	16	96	7	92	12	68	8	64	3
North Platte.....	66	31	69	19	62	30	90	23	90	16	95	18	97	126	97	16	96	7	92	12	68	8	64	3

Monthly Maximum Temperatures for the Year 1906, with Dates—Concluded.

STATIONS	January		Feb.		March		April		May		June		July		August		Sept.		Oct.		Nov.		Dec.	
	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date	Maximum	Date
<b>NORTHWESTERN SECTION</b>																								
Agate.....	60	19	64	28	69	31	84	23	85	20	95	16	93	21	83	14	90	8	84	3	86	5	80	8
Albion.....	65	19	70	28	80	31	86	24	92	16	100	16	98	21	97	16	100	8	86	3	85	5	80	8
Allamore.....	63	11	68	28	72	31	86	23	89	11	94	16	97	21	96	16	96	7	86	2	84	5	81	3
Fort Robinson.....	63	19	68	28	72	31	86	23	89	11	94	16	97	21	96	16	96	7	86	2	84	5	81	3
Hay Springs.....	62	19	68	28	72	31	86	23	89	11	94	16	97	21	96	16	96	7	86	2	84	5	81	3
Kennedy.....	63	19	68	28	72	31	86	23	89	11	94	16	97	21	96	16	96	7	86	2	84	5	81	3
Kirkwood.....	63	31	70	19	70	19	84	24	92	11	96	16	97	21	100	16	102	7	88	3	87	5	80	3
Springview.....	60	26	64	28	64	1	88	24	91	11	94	16	100	21	96	16	96	7	88	3	87	5	80	3
Valentine.....	61	31	69	21	68	31	91	23	90	11	95	16	97	21	97	16	99	7	90	12	87	4	84	3
Sioux City, Iowa.....	57	31	61	22	59	1	88	25	89	11	91	16	89	10	96	16	94	9	79	7	66	6	50	2
Yankton, South Dakota.....	62	26	63	22	54	30	88	24	92	11	93	16	91	21	99	16	96	10	83	7	64	7	57	2

\* Temperature data from thermometer not property of Weather Bureau, but of standard pattern.

† Occurred on more than one date.

‡ Temperature data from three daily observations, 7 a. m., 2 p. m., and 9 p. m.

## Monthly Minimum Temperatures for the Year 1906, with Dates.

STATIONS	January		Feb.		March		April		May		June		July		August		Sept.		Oct.		Nov.		Dec.	
	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date
<b>NORTHEASTERN SECTION</b>																								
Agassiz	-17	23	-16	14	-6	16	...	...	...	...	50	7	53	15	...	...	41	30	...	...	...	...	...	...
Atkinson	...	...	...	...	...	...	...	...	...	...	42	21	55	16	...	...	37	30	...	...	...	...	...	...
Bellevue	...	...	...	...	...	...	...	...	...	...	48	21	55	16	...	...	43	30	...	...	...	...	...	...
Blair	...	...	...	...	...	...	...	...	...	...	42	21	55	16	...	...	43	30	...	...	...	...	...	...
Bloomfield	...	...	...	...	...	...	...	...	...	...	41	4	43	23	...	...	32	30	...	...	...	...	...	...
Columbus	...	...	...	...	...	...	...	...	...	...	35	13	43	23	...	...	31	30	...	...	...	...	...	...
Clearwater	...	...	...	...	...	...	...	...	...	...	49	31	43	23	...	...	32	30	...	...	...	...	...	...
Fremont	...	...	...	...	...	...	...	...	...	...	35	13	43	23	...	...	32	30	...	...	...	...	...	...
Hardington	...	...	...	...	...	...	...	...	...	...	44	13	43	23	...	...	32	30	...	...	...	...	...	...
Hoopert	...	...	...	...	...	...	...	...	...	...	44	13	43	23	...	...	32	30	...	...	...	...	...	...
Leavitt	...	...	...	...	...	...	...	...	...	...	46	12	50	22	...	...	34	23	...	...	...	...	...	...
Lynch	...	...	...	...	...	...	...	...	...	...	38	21	44	17	...	...	30	30	...	...	...	...	...	...
Madison	...	...	...	...	...	...	...	...	...	...	39	2	50	18	...	...	30	30	...	...	...	...	...	...
Norfolk	...	...	...	...	...	...	...	...	...	...	44	2	49	17	...	...	31	30	...	...	...	...	...	...
Oakdale	...	...	...	...	...	...	...	...	...	...	42	21	47	23	...	...	32	30	...	...	...	...	...	...
Oakland	...	...	...	...	...	...	...	...	...	...	43	21	47	23	...	...	32	30	...	...	...	...	...	...
Omaha	...	...	...	...	...	...	...	...	...	...	52	21	57	17	...	...	42	30	...	...	...	...	...	...
Omaha	...	...	...	...	...	...	...	...	...	...	52	21	57	17	...	...	42	30	...	...	...	...	...	...
Santee	...	...	...	...	...	...	...	...	...	...	43	1	51	17	...	...	36	34	...	...	...	...	...	...
Stanton	...	...	...	...	...	...	...	...	...	...	43	2	48	23	...	...	36	34	...	...	...	...	...	...
Tekamah	...	...	...	...	...	...	...	...	...	...	43	2	48	23	...	...	36	34	...	...	...	...	...	...
Wakarusa	...	...	...	...	...	...	...	...	...	...	40	13	51	17	...	...	30	30	...	...	...	...	...	...
West Point	...	...	...	...	...	...	...	...	...	...	44	14	45	17	...	...	30	30	...	...	...	...	...	...
Winnebago	...	...	...	...	...	...	...	...	...	...	44	1	44	17	...	...	33	30	...	...	...	...	...	...
<b>SOUTHEASTERN SECTION</b>																								
Ashland	...	...	...	...	...	...	...	...	...	...	46	3	54	17	...	...	34	30	...	...	...	...	...	...
Auburn	...	...	...	...	...	...	...	...	...	...	44	13	52	16	...	...	37	30	...	...	...	...	...	...
Aurora	...	...	...	...	...	...	...	...	...	...	40	13	52	16	...	...	37	30	...	...	...	...	...	...
Beatrice	...	...	...	...	...	...	...	...	...	...	46	13	52	16	...	...	37	30	...	...	...	...	...	...
Crete	...	...	...	...	...	...	...	...	...	...	45	13	54	16	...	...	41	30	...	...	...	...	...	...
David City	...	...	...	...	...	...	...	...	...	...	47	1	53	16	...	...	39	30	...	...	...	...	...	...
Dawson	...	...	...	...	...	...	...	...	...	...	46	13	52	16	...	...	39	30	...	...	...	...	...	...
Fairbury	...	...	...	...	...	...	...	...	...	...	43	13	52	16	...	...	38	30	...	...	...	...	...	...
Farmington	...	...	...	...	...	...	...	...	...	...	44	1	53	16	...	...	38	30	...	...	...	...	...	...
Geneva	...	...	...	...	...	...	...	...	...	...	44	1	53	16	...	...	38	30	...	...	...	...	...	...
Harvard	...	...	...	...	...	...	...	...	...	...	43	13	52	16	...	...	38	30	...	...	...	...	...	...
Hebron	...	...	...	...	...	...	...	...	...	...	44	13	52	16	...	...	38	30	...	...	...	...	...	...

Monthly Minimum Temperatures for the Year 1906, with Dates—Concluded.

STATIONS	January		Feb.		March		April		May		June		July		August		Sept.		Oct.		Nov.		Dec.		
	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	Minimum	Date	
SOUTHEASTERN SECTION																									
Lincoln.....	2	8	5	14	5	17	32	15	6	34	13	54	7	47	27	40	30	28	10	18	19	4	18		
Nebraska City.....	2	8	5	14	5	17	23	15	9	45	13	53	6	47	27	36	30	28	10	18	19	4	18		
Palmira.....	2	8	5	14	5	17	23	15	9	45	13	53	6	47	27	36	30	28	10	18	19	4	18		
Pawnee City.....	0	8	1	15	11	17	23	15	9	45	13	51	7	44	27	35	30	19	10	14	18	3	18		
Plymouth.....	3	8	6	14	12	16	28	13	5	45	20	50	16	44	27	36	30	20	10	14	22	3	18		
Seward.....	5	7	8	14	12	16	28	13	30	5	42	20	50	30	41	28	34	29	9	15	118	0	17		
Superior.....	4	7	7	13	6	19	29	14	33	5	42	21	54	3	41	27	34	30	23	9	17	2	18		
Tecumseh.....	1	8	7	15	15	17	28	14	25	9	43	13	50	30	41	28	37	28	10	12	20	1	18		
Turlington.....	2	8	6	14	7	17	30	15	31	6	47	13	54	7	44	27	30	26	10	15	18	1	18		
University Farm*.....	4	8	6	14	7	17	30	15	33	6	43	13	51	7	43	27	36	30	21	10	15	18	0	18	
York.....	4	8	8	14	11	17	29	6	30	6	46	1	53	16	43	27	33	30	19	10	9	21	1	18	
CENTRAL SECTION																									
Albion.....	14	8	13	14	15	17	25	4	25	10	41	112	45	1	37	27	30	16	10	5	20	2	18		
Broken Bow.....	11	8	8	14	10	17	21	5	26	6	39	21	43	17	38	27	32	11	10	8	22	7	18		
Callaway.....	13	8	5	15	7	16	25	6	26	6	34	14	42	17	39	27	32	11	10	12	22	1	18		
Genoa.....	8	8	15	14	8	20	31	4	30	6	48	8	65	7	45	27	35	20	10	5	23	1	18		
Gothenburg.....	9	8	15	14	8	20	22	5	26	6	38	21	46	8	38	27	31	13	11	10	118	6	18		
Grand Island.....	2	22	6	14	4	17	30	4	36	8	49	8	54	7	43	27	32	30	18	10	14	19	8	18	
Kearney.....	7	21	5	14	13	16	25	13	29	5	38	20	51	17	43	27	30	18	9	0	17	4	17		
Lexington.....	9	8	12	14	11	17	23	15	25	6	38	21	48	12	38	27	30	16	10	9	21	2	18		
Loup City.....	10	8	10	14	12	17	25	15	27	6	40	21	41	8	37	27	28	16	10	5	20	4	14		
North Loup.....	16	8	10	14	18	16	21	4	24	6	34	7	44	17	40	27	27	13	15	10	5	21	2	18	
Purdum.....	18	8	10	14	10	17	26	15	28	6	40	8	47	8	38	27	29	15	10	8	21	2	18		
Ravenna.....	7	8	10	14	10	17	26	15	28	6	40	8	47	8	38	27	29	15	10	8	21	2	18		
St. Paul.....	4	8	9	14	11	17	27	15	30	6	42	21	51	8	41	27	33	30	18	9	21	2	18		
SOUTHWESTERN SECTION																									
Alma.....	3	8	2	15	14	17	29	6	32	6	47	21	51	8	42	27	29	30	16	10	7	21	2	18	
Beaver City.....	1	8	2	14	7	17	28	15	33	6	44	21	51	4	46	27	34	30	22	10	11	21	7	18	
Culbertson.....	0	22	4	15	8	17	22	1	30	3	40	22	46	1	45	31	32	30	26	10	...	...	8	18	
Curtis.....	8	21	13	14	12	16	28	15	30	3	40	22	50	1	45	31	32	30	26	10	...	...	8	18	
Franklin.....	9	8	6	15	11	17	29	15	33	6	44	21	51	8	42	27	35	30	18	16	10	11	118	1	18
Grant.....	4	8	8	14	2	12	29	14	27	6	39	9	45	3	41	26	47	30	31	2	20	3	18	1	18
Hastings.....	4	22	8	14	3	12	29	14	41	27	58	19	60	2	52	26	47	30	31	15	19	7	18	5	18
Hayes Center.....	2	8	6	15	3	12	25	14	30	6	42	25	49	17	46	27	38	30	22	30	10	18	5	18	

Holbrook.....	—	3	21	—	4	2	—	10	20	25	1	31	6	39	20	50	4	47	26	29	30	18	30	10	21	5	18		
Holdrege.....	—	0	22	—	4	14	—	9	17	28	22	30	6	42	21	50	7	47	27	37	30	21	10	11	19	6	16		
Imperial.....	—	0	22	—	8	15	—	12	17	28	15	28	17	34	6	44	4	41	27	35	30	19	8	6	20	5	18		
Minden.....	—	2	22	—	4	14	—	9	17	28	15	28	6	39	21	49	7	40	27	29	30	16	10	10	18	5	18		
Red Cloud.....	—	8	3	—	—	—	—	3	17	23	13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	18		
WESTERN SECTION																													
Bridgeport.....	—	9	8	—	7	†	4	—	20	16	25	†	4	23	6	36	21	4	4	43	27	30	18	13	23	3	20	5	15
Gering.....	—	14	8	—	8	†	5	—	16	16	24	15	27	6	38	25	44	1	—	—	—	—	—	—	—	—	—	14	
Halley.....	—	0	†	7	—	10	3	—	11	16	23	13	25	5	36	†	19	46	1	43	26	33	4	10	5	20	5	14	
Kimball.....	—	0	†	7	—	10	3	—	11	16	23	13	25	5	36	†	19	46	1	43	26	33	4	10	5	20	5	14	
Lodge Pole.....	—	1	8	—	0	†	4	—	8	17	24	5	28	6	39	21	48	4	44	26	38	30	2	10	10	21	10	†	16
North Platte.....	—	1	8	—	0	†	4	—	8	17	24	5	28	6	39	21	48	4	44	26	38	30	2	10	10	21	10	†	16
NORTHWESTERN SECTION																													
Agate.....	—	19	22	—	7	†	4	—	28	16	10	15	20	6	23	21	38	4	36	26	31	29	10	31	7	20	0	15	
Ainsworth.....	—	13	8	—	9	14	—	20	16	21	4	24	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	
Alliance.....	—	10	21	—	13	3	—	20	16	21	4	23	6	36	1	42	4	41	25	34	26	31	10	31	7	20	0	15	
Fort Robinson.....	—	10	21	—	13	3	—	20	16	21	4	23	6	36	1	42	4	41	25	34	26	31	10	31	7	20	0	15	
Hay Springs.....	—	14	8	—	12	4	—	23	16	18	4	22	6	31	1	40	8	39	26	32	18	14	24	2	19	0	14	—	
Kennedy.....	—	14	22	—	6	14	—	17	16	22	4	29	7	29	24	47	29	41	27	36	13	18	21	2	19	0	14	—	
Kirkwood.....	—	20	8	—	1	14	—	14	16	21	†	4	24	5	40	1	44	17	42	27	35	30	13	10	4	21	2	7	
Springview.....	—	14	22	—	12	14	—	14	16	20	4	25	6	40	†	1	47	17	42	27	36	13	14	24	5	†	19	—	
Valentine.....	—	18	22	—	8	14	—	18	16	20	4	23	5	41	1	47	17	44	26	38	13	16	10	3	19	3	19	5	6
Sioux City, Iowa.....	—	7	8	—	14	14	—	2	16	29	6	31	6	45	2	52	30	43	27	37	30	24	10	13	19	2	18	—	
Yankton, South Dakota.....	—	11	8	—	14	10	—	4	16	27	4	32	6	46	14	50	23	47	27	37	30	23	10	17	21	0	18	—	

\* Temperature data from thermometers not property of Weather Bureau, but of standard pattern.

† Occurred on more than one date.

‡ Temperature data from three daily observations, 7 a. m., 2 p. m., and 9 p. m.



*Monthly and Annual Precipitation for the Year*

STATIONS	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure
<b>NORTHEASTERN SEC.</b>												
Bellevue	0.78	-0.16	1.13	-0.02	3.42	+2.11	3.00	+0.63	2.79	-1.49	4.98	+0.91
Blair	0.52	+0.09	0.67	+0.19	1.67	+0.43	3.77	+0.39	7.04	+1.63	4.08	-0.52
Bloomfield	0.03	.....	0.63	.....	1.90	.....	4.04	.....	2.36	.....	3.31	.....
Clearwater	0.34	.....	0.42	.....	0.49	.....	4.23	.....	3.14	.....	2.87	.....
Columbus	0.19	-0.13	1.13	-0.55	0.99	+0.03	3.96	+0.89	3.94	-0.24	2.65	-1.40
Fremont	0.73	-0.19	0.90	-0.03	2.07	-0.41	6.18	-3.28	4.63	+0.16	5.62	+0.55
Hartington	0.65	-0.17	1.60	-0.61	1.95	-0.41	5.22	-1.92	1.16	-3.35	2.83	-1.44
Hooper	0.57	+0.22	1.73	+1.01	1.35	+0.12	6.15	+3.30	6.08	+1.00	7.63	+1.70
Leavitt	0.44	.....	0.96	.....	1.20	.....	7.51	.....	5.06	.....	7.86	.....
Madison	0.75	-0.29	1.10	-0.39	1.45	-0.27	6.18	-2.69	4.51	-0.36	2.95	-1.35
Norfolk	0.54	-0.14	1.01	-0.27	1.08	-0.05	5.70	-2.89	5.95	+1.69	4.32	-0.29
Oakdale	0.47	0.00	0.98	-0.38	0.99	-0.06	4.90	+1.81	2.16	-1.78	3.91	-0.64
Oakland	0.59	.....	1.91	.....	2.85	.....	3.31	.....	4.73	.....	4.95	.....
Omaha	0.60	-0.09	0.71	-0.08	1.75	-0.25	3.67	-0.54	2.50	-1.87	5.30	-0.97
Santee	0.60	-0.05	0.64	-0.04	1.29	-0.12	2.99	-0.25	3.53	+0.10	3.41	-0.59
Stanton	0.62	-0.21	1.86	-1.18	2.25	-1.12	6.07	-2.71	3.31	-1.00	3.10	-1.12
Tekamah	0.80	-0.02	1.60	-0.71	2.58	-0.98	4.32	-0.96	5.08	+0.61	6.60	+0.62
Wakefield	0.52	-0.07	1.50	-0.79	0.97	-0.18	3.58	-0.59	4.23	-0.09	5.23	-0.17
West Point	0.30	-0.28	0.84	-0.18	1.05	-0.28	5.54	-2.74	2.00	-2.01	3.69	-1.82
<b>SOUTHEASTERN SEC.</b>												
Ashland	0.48	-0.12	1.05	+0.41	2.00	+0.80	3.74	+0.91	1.90	-2.42	5.93	+1.34
Auburn	0.70	-0.13	1.49	-0.35	3.80	-1.68	3.58	-0.27	1.83	-4.14	9.09	+4.04
Bradshaw	0.46	+0.06	0.80	-0.04	2.03	-0.80	6.04	-2.53	3.95	-1.93	3.05	-2.03
Beatrice	0.62	0.00	1.35	+0.44	2.09	+0.59	1.90	-0.60	2.51	-2.04	5.08	+0.84
Crete	0.37	-0.27	0.72	-0.02	2.63	-1.04	3.42	-0.51	1.86	-2.52	3.95	-1.43
David City	0.72	-0.10	1.66	-0.91	2.20	-0.54	5.67	-1.86	3.64	-0.88	5.34	+1.00
Dawson	0.71	-0.03	2.68	-1.70	2.08	-0.32	3.27	-0.13	1.51	-3.26	4.69	+0.87
Fairbury	0.42	-0.32	1.06	-0.31	1.63	-0.03	5.10	-2.25	3.12	-1.64	1.94	-1.94
Fairmont	1.00	+0.35	0.75	-0.03	3.03	-1.81	4.30	-0.60	2.65	-1.60	2.41	-1.59
Geneva	0.19	-0.25	0.58	-0.50	3.16	-2.07	5.89	-2.43	2.16	-2.70	2.83	-2.20
Harvard	0.34	-0.15	0.65	-0.11	1.47	-0.38	5.92	-2.38	2.56	-1.66	3.73	-0.02
Hebron	0.64	-0.13	0.66	-0.03	1.92	-0.46	3.27	-0.52	3.40	-1.19	2.81	-1.84
Lincoln	0.49	-0.17	0.86	-0.06	3.67	-2.30	3.51	-0.89	1.53	-2.85	3.60	-0.63
McCool Junction	0.52	+0.12	0.53	-0.03	1.63	-0.52	5.97	-2.21	1.65	-3.39	3.70	-0.16
Marquette	0.41	-0.19	0.62	-0.11	1.65	-0.59	6.57	-3.63	2.58	-1.40	4.20	-0.18
Nebraska City	0.35	-0.43	1.00	+0.06	3.24	-1.68	2.64	-0.12	1.66	-3.08	6.52	+1.64
Palmyra	0.20	-0.14	0.60	-0.04	2.75	-1.63	2.05	-0.69	0.85	-3.78	3.25	-1.80
Pawnee City	0.85	-0.14	0.86	-0.14	1.82	-0.69	2.44	-0.79	2.65	-2.04	3.89	-1.44
Plymouth	0.01	.....	0.80	.....	1.18	.....	3.90	.....	2.90	.....	2.96	.....
Seward	0.60	+0.05	1.00	+0.20	3.14	+1.70	5.55	+1.97	0.90	-3.48	4.30	+0.02
Superior	0.40	-0.16	0.31	-0.46	1.87	-0.77	4.44	-1.36	3.30	-0.64	2.52	-1.71
Table Rock	0.70	+0.16	1.26	+0.11	1.99	-0.73	3.04	-0.37	2.38	-1.67	5.40	-0.15
Tecumseh	0.28	-0.65	1.20	-0.13	2.05	-0.38	1.87	-1.12	1.95	-2.84	9.19	+3.98
Turlington	0.87	+0.10	1.16	-0.22	3.60	-2.13	2.25	-0.47	1.53	-2.91	5.08	-1.14
University Farm	0.29	-0.27	0.54	-0.43	3.21	-2.01	2.86	-0.22	1.71	-2.83	3.46	-0.95
Weeping Water	0.54	-0.33	1.06	-0.17	2.03	-0.62	1.89	-0.60	1.75	-2.42	4.89	-0.01
York	0.67	+0.15	0.85	-0.14	2.05	+0.88	5.25	+1.48	1.61	-2.71	2.35	-1.86
<b>CENTRAL SEC.</b>												
Albia	0.80	+0.26	0.77	+0.08	1.16	+0.15	5.12	+1.84	4.29	-0.18	6.62	+2.10
Broken Bow	0.55	-0.28	0.22	-0.25	0.62	-0.27	9.35	-5.51	2.23	-1.22	1.77	-2.85
Callaway	0.50	-0.12	0.34	-0.28	1.00	-0.11	8.88	-5.85	1.06	-2.08	1.32	-2.80
Ericson	1.00	-0.40	0.22	-0.55	1.20	-0.07	6.75	-3.67	3.50	+0.26	1.25	-2.38
Genoa	0.49	-0.22	1.01	+0.27	2.06	-0.75	7.17	-4.04	1.99	-3.36	2.65	-1.65
Gothenburg	0.37	-0.10	0.60	-0.39	1.33	-0.38	3.97	-1.22	1.29	-2.07	1.40	-3.15
Kearney	0.72	+0.21	0.46	-0.43	1.18	-0.18	5.94	-2.92	3.86	-0.79	1.30	-2.80
Lexington	0.50	-0.14	0.46	-0.47	2.30	-1.02	6.11	-3.49	0.97	-2.20	1.25	-2.48
Loup City	0.25	+0.02	0.50	+0.12	0.60	-0.45	6.55	-3.08	1.60	-2.03	0.51	-5.57
North Loup	0.67	-0.01	0.40	-0.22	0.69	-0.38	6.41	-3.19	1.33	-1.88	1.46	-3.12
Ord	0.32	0.00	0.97	-0.38	0.99	-0.03	7.95	-4.69	1.64	-1.57	0.57	-3.69
Purdum	0.65	.....	0.20	-1.05	2.25	+0.92	5.17	-2.43	2.77	-0.36	1.33	-1.44
Ravenna	0.51	-0.14	0.82	-0.06	1.52	-0.15	6.39	-3.57	2.27	-1.31	2.12	-1.73
St. Libory	0.55	+0.02	1.18	+0.37	1.64	-0.46	7.24	-3.77	1.50	-2.87	3.61	-0.94
St. Paul	0.46	+0.03	0.53	-0.09	1.38	-0.26	6.17	-3.09	5.01	+1.05	1.93	-3.45

1906, with Departures from the Normal.

JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		ANNUAL	
Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure
5.86	+1.40	2.27	-0.68	5.50	+1.93	1.54	-0.57	0.72	-0.35	1.24	-0.03	33.27	+3.68
3.36	-0.88	1.04	-2.99	5.67	+2.16	2.53	+0.05	0.50	-0.58	1.54	+0.71	32.39	+0.75
2.38	.....	5.09	.....	7.18	.....	3.54	.....	0.18	.....	1.16	.....	31.80	.....
1.21	.....	3.54	.....	7.29	.....	3.57	.....	.....	.....	.....	.....	.....	.....
3.02	-0.28	3.07	-0.45	3.88	+0.74	3.75	-1.74	0.48	-0.21	0.94	+0.39	28.00	+1.60
5.11	+0.75	4.66	+0.79	5.80	+2.99	2.61	-0.30	0.43	-0.49	1.12	+0.14	39.86	-8.73
1.50	-1.53	10.75	+6.93	7.31	+4.39	4.66	+2.92	0.32	-0.73	0.56	-0.49	38.46	-9.47
2.91	-1.78	4.51	+0.80	6.03	+1.79	2.62	-0.54	0.41	-0.60	1.06	+0.38	41.05	-7.87
2.06	.....	4.89	.....	5.31	.....	3.09	.....	0.23	.....	1.24	.....	39.85	.....
2.70	-0.41	3.39	+0.03	4.45	+1.46	3.33	+1.21	0.35	-0.54	1.63	+0.94	32.79	+4.62
2.22	-1.75	2.79	-1.02	6.11	+2.74	3.31	+1.63	0.72	+0.02	1.25	+0.53	35.00	-7.90
1.49	-2.03	3.53	+0.84	5.12	+2.50	3.25	+1.61	0.87	+0.21	1.49	+0.85	29.16	+4.00
2.62	.....	3.95	.....	4.94	.....	3.08	.....	0.11	.....	1.20	.....	34.24	.....
2.85	-1.90	2.03	-1.31	4.84	+1.93	1.50	-0.91	0.62	-0.54	1.26	+0.25	27.59	+4.10
2.39	-1.07	4.60	+1.74	3.00	+0.71	4.61	+2.78	1.19	+0.89	1.17	-0.61	29.42	-5.05
1.95	-1.70	2.83	-0.46	4.61	+1.70	3.20	+1.85	0.49	-0.39	1.42	+0.62	31.72	+4.22
4.85	+0.13	3.21	-0.65	5.09	+2.03	2.92	-1.14	0.49	-0.69	1.33	-0.37	38.26	-6.26
1.12	-1.89	6.18	+2.37	8.22	+4.66	3.74	+1.38	0.58	-0.43	0.80	-0.03	36.67	-7.53
3.87	-0.00	3.55	-0.83	5.53	+2.62	3.72	+1.97	0.32	-0.71	1.08	+0.20	31.49	-2.19
4.68	-0.24	3.03	-1.04	6.84	+3.89	2.05	-0.19	0.40	-0.37	1.94	+1.22	34.10	+4.19
3.39	-1.50	4.05	-0.64	2.81	-0.25	1.43	-1.50	0.72	-0.59	0.96	-0.38	33.46	-2.59
3.22	-1.49	4.36	-0.77	.....	.....	5.14	+1.48	0.13	-1.00	1.58	+0.99	.....	.....
2.85	-1.37	2.47	-1.52	4.51	+1.87	1.95	-0.48	0.48	-0.36	0.96	+0.10	26.77	-2.53
4.71	+0.29	2.98	-0.68	5.27	+2.93	2.32	-0.08	0.58	-0.19	0.94	+0.32	29.76	-1.15
7.51	+3.43	3.24	-0.39	3.51	+0.97	4.04	+1.87	0.61	-0.23	1.11	+0.37	39.25	-9.36
2.70	-2.37	2.75	-0.94	7.77	+4.19	2.11	-1.23	0.95	-0.15	0.49	-0.25	31.71	-1.53
2.04	-2.74	3.73	+0.55	4.89	+2.34	2.11	-0.24	0.46	-0.37	0.75	+0.13	27.30	-2.24
0.97	+2.67	4.23	-1.12	3.14	+0.28	3.09	+0.13	0.07	-0.66	0.93	+0.45	30.77	-0.97
4.87	+1.08	2.48	+1.02	2.35	-0.17	3.21	+0.62	T	-0.84	0.99	+0.34	30.46	+1.26
4.99	+1.09	3.44	+0.28	3.21	+0.48	3.58	+1.14	0.05	-0.61	1.04	+0.38	30.88	-3.46
2.29	-2.03	2.42	-0.96	2.88	-0.45	1.81	-0.27	0.34	-0.67	0.77	+0.13	23.19	-5.61
0.85	+3.03	2.74	-0.52	7.80	+5.56	2.12	+0.09	0.29	-0.40	0.83	+0.08	34.08	-7.32
4.37	-0.11	2.54	+0.60	2.79	-0.83	4.07	+1.7	0.06	-0.90	1.07	+0.54	28.99	-1.24
4.71	-0.58	1.76	-1.16	3.41	-0.92	3.65	+1.88	0.36	-0.34	1.25	+0.62	32.17	+4.34
4.12	-0.43	3.79	+0.06	8.65	+5.01	1.17	-1.79	0.70	-0.22	0.95	+0.20	34.79	-3.53
5.70	+1.83	2.65	-0.93	7.75	+4.21	2.05	-0.08	0.45	-0.72	0.70	+0.00	29.69	-0.43
3.51	-0.47	4.74	+0.89	3.47	-0.36	1.93	-0.82	0.46	-1.25	0.40	-0.28	27.02	-5.18
3.74	.....	2.52	.....	4.04	.....	1.95	.....	0.23	.....	0.70	.....	24.89	.....
4.07	-0.27	4.35	+0.55	8.70	+5.59	3.15	-0.77	0.15	-0.82	1.20	+0.57	37.11	+6.84
1.96	-3.27	2.07	-0.68	2.52	-0.21	2.46	-0.30	0.05	-0.73	0.68	+0.13	22.28	-4.88
3.35	-0.87	2.44	-0.88	4.55	-1.72	1.53	-1.05	0.52	-0.77	0.45	+0.26	27.91	-2.57
1.53	-2.70	1.34	-0.47	5.69	+3.06	1.40	-1.17	0.50	-0.58	0.49	-0.26	30.53	-1.30
3.46	-0.80	1.83	-2.10	6.93	+3.65	1.15	-1.28	0.88	-0.15	0.89	-0.06	29.61	-0.02
7.88	+3.82	2.32	-1.80	6.79	+4.24	1.95	-0.41	0.32	-0.45	0.86	+0.06	32.19	-3.68
2.73	-1.27	2.99	-0.81	3.86	-0.89	0.82	-1.55	0.49	-0.62	0.82	-0.01	23.87	-6.03
4.62	+0.46	1.45	-1.96	2.63	-0.40	4.06	+1.97	0.22	-0.48	1.03	+0.46	26.79	-1.57
2.81	-0.75	2.83	+0.02	3.14	+0.55	3.27	+1.06	0.43	-0.41	1.86	+1.26	32.69	+6.00
5.89	+1.73	4.06	+1.10	2.55	-0.29	3.75	+1.70	1.60	+1.03	1.03	+0.70	33.62	-7.75
2.60	-0.83	3.73	+0.82	4.17	+2.25	4.73	+3.80	1.10	+0.51	0.96	-0.58	30.28	-7.60
1.22	-2.25	2.28	-0.19	5.88	+3.06	.....	.....	0.47	-0.01	2.70	+1.51	.....	.....
2.20	-1.75	3.45	+0.42	3.98	-0.84	3.20	+1.43	0.49	-0.29	1.14	+0.34	29.83	+1.82
2.98	+0.01	4.05	+0.66	1.62	-0.53	3.36	+1.73	1.26	+0.52	1.15	+0.75	23.29	-0.97
5.05	-0.39	5.02	+1.91	4.27	+1.39	2.78	-0.77	.....	.....	.....	.....	.....	.....
2.04	-1.15	4.87	+1.81	2.25	-0.19	3.26	+1.78	0.62	+0.26	1.56	+0.98	25.91	+2.13
6.29	+0.97	3.00	-0.96	2.30	-1.06	2.61	-0.25	1.26	+0.65	1.65	+1.17	27.12	-3.53
4.61	+0.54	3.98	+1.29	3.12	-0.98	2.82	+1.05	1.09	+0.51	1.32	+0.82	27.90	-2.78
2.66	-0.96	6.75	+3.62	6.21	+3.45	3.94	+1.74	1.87	-0.73	1.65	+1.20	34.98	+9.60
1.02	-2.61	5.91	-0.11	2.78	-0.55	3.20	+1.40	1.78	+1.09	1.44	+0.77	28.50	.....
4.00	-0.02	4.57	+1.34	2.35	-0.12	2.70	-0.92	0.85	+0.23	1.60	+0.96	29.70	+4.03
3.99	-1.52	3.40	+0.15	2.43	-0.80	3.04	-0.81	0.43	-0.38	1.53	+0.89	29.51	+0.16
3.68	-1.29	2.24	-1.32	2.39	-0.41	3.06	-0.96	0.55	-0.20	1.33	+0.96	28.75	-0.55

*Monthly and Annual Precipitation for the Year 1906,*

STATIONS	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure
<b>SOUTHWESTERN SEC.</b>												
Alma .....	0.17	-0.16	0.64	-0.13	0.95	+0.01	5.37	-2.01	0.88	-3.02	1.12	-2.33
Beaver City .....	0.33	+0.07	0.66	+0.03	1.25	+0.48	5.51	-2.80	0.71	-2.42	1.79	-2.24
Blue Hill .....	0.20	-0.10	0.85	+0.17	2.15	-1.22	4.61	-0.86	1.22	-2.71	1.97	-2.99
Culbertson .....	0.32	-0.06	0.40	-0.21	1.53	-0.42	3.48	-1.02	1.14	-1.61	1.01	-2.46
Grant .....	0.15	.....	1.20	.....	2.54	.....	3.43	.....	3.02	.....	3.51	.....
Guide Rock .....	0.55	-0.07	0.89	-0.04	2.43	-0.84	4.98	-2.39	1.74	-3.25	2.39	-1.00
Haastings .....	0.48	+0.06	1.51	+0.40	3.02	-1.80	3.52	-0.06	2.20	-1.80	2.50	-1.95
Hayes Center .....	0.60	+0.11	0.40	-0.78	4.42	-2.97	7.75	-4.94	3.15	-0.07	1.70	-1.63
Holtbrook .....	0.31	-0.21	0.60	-0.41	1.39	-0.57	4.94	-2.46	1.17	-3.20	1.68	-2.22
Holbrook .....	0.30	-0.10	0.70	-0.16	1.85	-0.71	7.90	-4.32	1.40	-3.61	0.92	-3.06
Imperial .....	0.65	+0.14	0.52	-0.31	3.38	-1.89	5.97	-3.37	2.43	-0.57	1.54	-2.01
Minden .....	0.40	-0.44	1.02	-0.06	1.80	-0.35	4.28	-0.68	0.78	-4.34	2.40	-2.67
McCook .....	0.25	-0.06	0.70	-0.05	2.85	-2.03	2.44	-0.24	2.15	-1.05	2.37	-1.11
Smithfield .....	0.45	+0.08	0.6	-0.34	1.80	-0.75	5.30	-2.18	0.92	-3.50	1.07	-3.11
Stratton .....	0.30	-0.01	0.40	-0.31	1.83	-0.57	2.93	-0.49	1.90	-0.97	0.78	-2.55
Wauneta .....	0.50	+0.16	0.90	+0.09	3.50	-1.74	4.05	-1.63	2.44	-0.21	1.41	-2.45
<b>WESTERN SEC.</b>												
Bridgeport .....	T.	-0.47	T.	-0.62	3.20	+2.15	1.75	-0.44	2.87	-0.10	2.28	+0.15
Halsey .....	0.40	.....	0.17	.....	0.84	.....	6.37	.....	2.49	.....	2.63	.....
Kimball .....	0.1	-0.32	0.20	-0.53	2.00	+0.98	2.52	+0.37	3.86	+1.19	1.88	-0.26
North Platte .....	0.61	+0.14	0.80	+0.38	2.22	+1.47	2.89	+0.72	2.82	+0.12	0.68	-2.74
<b>NORTHWESTERN SEC.</b>												
Agate .....	0.47	+0.19	0.23	-0.29	1.05	+0.22	1.66	-0.23	2.76	+0.38	3.24	+0.15
Ainsworth .....	0.65	.....	0.08	.....	3.02	.....	4.00	.....	4.15	.....	0.58	.....
Allamore .....	0.15	-0.45	T.	-0.39	1.3	+0.40	3.70	-1.65	2.81	-0.03	3.88	+1.01
Duff .....	0.45	+0.09	0.3	-0.46	1.35	-0.27	7.30	-4.01	4.05	+0.09	1.30	-2.70
Fort Robinson .....	0.37	-0.31	0.99	+0.44	1.80	-0.58	2.30	-0.58	3.94	+1.30	2.83	+0.01
Hay Springs .....	0.35	-0.34	0.91	+0.18	1.70	-0.12	3.08	-0.90	3.02	-0.19	2.47	-0.78
Kennedy .....	1.30	+0.61	0.25	-0.53	2.50	+1.01	2.75	-0.26	3.32	+0.12	0.79	-3.63
Kirkwood .....	1.05	+0.47	0.35	-0.24	1.65	-0.55	4.42	-1.93	2.44	-1.60	1.97	-1.65
Springview .....	0.40	-0.09	.....	.....	1.95	-0.97	3.80	-1.12	2.21	-0.61	1.23	-2.46
Valentine .....	0.52	-0.08	0.33	+0.41	2.50	+1.01	2.68	-0.16	4.14	+1.32	1.56	-1.89

T. Trace (when precipitation is less than 0.01 of an inch).

*with Departures from the Normal—Concluded.*

JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		ANNUAL	
Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure	Precipitation	Departure
0.96	-2.81	6.86	+3.57	1.98	-0.51	2.81	+0.75	0.57	-0.19	0.84	+0.48	23.15	-2.33
4.32	-0.01	2.51	+0.17	1.54	-0.49	3.58	-2.31	0.80	+0.18	1.19	+0.76	24.22	+1.64
4.52	+0.68	1.72	-1.45	2.03	-1.03	3.18	-0.90	0.00	-0.70				
2.88	-0.64	2.60	-0.07	0.87	-0.67	2.74	+1.57	0.48	+0.09	0.84	+0.47	17.79	-2.15
2.67	.....	2.76	.....	1.78	.....	1.80	.....	0.43	.....	0.41	.....	23.70	.....
6.98	+0.19	0.95	-1.69	3.32	-0.14	3.29	+1.16	0.05	-0.68	0.72	+0.36	27.99	-1.93
3.19	-0.64	2.09	-1.32	1.73	-0.93	2.2	-0.03	0.15	-0.51	0.80	+0.28	23.47	+4.52
0.77	-1.93	3.21	+0.56	0.78	-1.20	2.45	-0.97	0.70	+0.14	0.90	+0.55	26.98	+4.63
4.05	-0.85	5.79	+2.84	1.39	-1.12	3.10	-1.60	0.95	+0.51	1.25	+0.81	26.62	+0.78
4.30	+0.92	4.46	+1.68	2.87	+0.47	3.90	-2.06	1.04	-0.44	1.12	+0.60	30.76	+4.27
2.67	-0.40	2.67	+0.16	2.80	+1.45	2.47	-1.42	0.78	+0.34	0.45	-0.08	26.33	+5.40
3.35	-1.41	2.91	-0.68	1.74	-1.00	2.95	-0.88	0.62	-0.32	0.92	+0.25	23.17	-8.12
2.65	-0.81	2.00	-0.39	1.70	-0.50	1.93	-0.74	0.75	-0.13	0.80	+0.48	20.59	-0.35
5.83	-0.54	4.74	+0.80	1.85	-0.86	3.75	-1.47	0.96	-0.60				
1.73	-0.93	3.67	+1.30	0.74	-1.22	1.37	-0.02	1.25	+0.59	0.40	+0.04	17.30	-2.98
1.24	-1.88	3.58	+0.56	1.85	-0.09	2.00	+0.99	0.70	+0.15	0.65	+0.40	22.82	+1.09
1.22	-1.18	1.42	-0.57	0.98	-0.22	2.50	+1.79	0.55	+0.27	0.20	-0.27	16.97	+0.58
1.79	.....	5.84	.....	3.17	.....	.....	.....	1.11	.....	3.97	.....	.....	.....
2.36	-0.23	2.06	+0.65	1.01	+0.06	1.86	+1.27	.....	.....	.....	.....	.....	.....
3.14	+0.40	5.56	+3.14	4.25	+2.97	3.05	+2.07	1.01	+0.66	0.96	+0.39	27.99	+9.72
2.09	-0.21	2.58	+1.17	2.79	+1.32	1.05	+0.24	0.26	+0.06	0.51	+0.02	18.69	+3.02
0.55	.....	6.29	.....	3.10	.....	3.97	.....	0.71	.....	1.26	.....	28.36	.....
1.01	-1.59	3.75	+1.94	1.32	+0.50	3.30	-2.66	0.95	+0.60	0.70	+0.32	22.87	+6.52
1.65	-2.22	5.25	+1.81	2.10	-0.28	2.15	-0.57	.....	.....	1.00	+0.58	.....	.....
1.10	-0.99	3.23	+1.62	3.48	+2.45	2.79	-1.46	0.32	-0.08	0.37	-0.3	23.52	+6.73
2.08	-0.63	3.42	+1.48	2.37	-1.30	2.40	-1.14	0.41	-0.19	1.05	+0.32	23.26	+3.31
2.35	-1.12	4.82	+2.19	3.21	-1.79	3.35	-2.21	0.95	+0.39	1.40	+0.71	26.99	+4.01
1.20	-2.69	5.46	+1.70	3.05	-0.74	2.22	-0.20	1.00	+0.36	1.05	+0.46	25.89	+0.23
0.87	-2.47	6.38	+3.40	3.24	-1.69	2.86	-1.67	0.25	-0.16	.....	.....	.....	.....
1.88	-0.62	5.02	+2.97	3.17	-2.19	3.42	-2.52	0.92	+0.51	0.40	+0.03	26.54	+7.39

## COOPERATIVE OBSERVERS.

STATIONS	OBSERVERS	STATIONS	OBSERVERS
Agate	H. J. Cook.	Kearney	S. J. Duncan.
Albion	John M. Cotton.	Kennedy	W. W. Piercy.
Alliance	F. A. Pittenger.	Kimball	F. J. Bellows.
Alma	Agent C., B. & Q. Ry.	Kirkwood	Mrs. C. Arter.
Anoka	W. A. Sharpnack.	Leavitt	H. Scilley.
Arapahoe	W. Whitla.	Level (near)	Geo. Thomas.
Arcadia	Agent C., B. & Q. Ry.	Lexington	Ira P. Griswold.
Ashland	James L. Owen.	Lincoln	U. S. Weather Bureau
Ashland	Dr. A. S. Mansfælde.	Lodge Pole	A. B. Persinger.
Ashton	Agent C., B. & Q. Ry.	Loup City	E. S. Hayhurst.
Atkinson	F. Rein.	Lynch	S. W. Lightner.
Auburn	Chas. J. Wilson.	McCook	Agent C., B. & Q. Ry.
Aurora	G. D. Carrington.	McCool Junction	E. C. Gilliland.
Beatrice	Agent C., B. & Q. Ry.	Madison	Dr. F. A. Long.
Beaver City	Wm. S. Waxham.	Marquette	John Ellis.
Bellevue	C. G. George.	Mason City	John Amaberry.
Benkelman	A. A. Tyler.	Merriman	Agent C. & N. W. Ry.
Blair	Agent C., B. & Q. Ry.	Minden	Joel Hull.
Bloomfield	H. H. Hahn.	Monroe	Wm. Webster.
Blue Hill	W. R. Ellis.	Nebraska City	Agent C., B. & Q. Ry.
Bradshaw	Agent C., B. & Q. Ry.	Nemaha	Agent C., B. & Q. Ry.
Bridgeport	E. C. Roggy.	Norfolk	Dr. P. H. Salter.
Broken Bow	Robt. H. Willis.	North Loup	W. G. Rood.
Burchard	Agent C., B. & Q. Ry.	North Platte	U. S. Weather Bureau
Burwell	Agent C., B. & Q. Ry.	Oakdale	G. S. Clingman.
Callaway	Agent C., B. & Q. Ry.	Oakland	John P. Young.
Central City	J. H. Evans.	Odell	Agent C., B. & Q. Ry.
Chester	Agent C., B. & Q. Ry.	Omaha	U. S. Weather Bureau
Cody	Agent C. & N. W. Ry.	Ord	Jas. Milford.
Columbus	C. C. Gray.	Palmer	Agent C., B. & Q. Ry.
Crawford	Agent C., B. & Q. Ry.	Palmyra	Thomas Coles.
Crete	Doane College.	Pawnee City	Frank A. Barton.
Culbertson	Miss Irma Parrish.	Plattsmouth	Agent C., B. & Q. Ry.
Curtis	Dr. S. R. Razeo.	Plymouth	John Ruppel.
David City	S. Clingman.	Purdum	T. C. Jackson.
Dawson	Ira A. Draper.	Ravenna	Erastus Smith.
Dubois	A. Schick, Jr.	Red Cloud	Agent C., B. & Q. Ry.
Duff	Dewitt Eager.	Republican	Agent C., B. & Q. Ry.
Dunning	Agent C., B. & Q. Ry.	Rulo	Agent C., B. & Q. Ry.
Edgar	Agent C., B. & Q. Ry.	St. Libory	W. I. Meader.
Edgar	Geo. W. Ferree.	St. Paul	Paul Anderson.
Ellis	D. J. Wood.	Santee	E. G. Kendall.
Ericson	Agent C., B. & Q. Ry.	Schuyler	Agent C., B. & Q. Ry.
Ewing	G. H. Benson.	Scottsbluff	A. B. McCoskey.
Fairbury	W. F. Cramb.	Seneca	Agent C., B. & Q. Ry.
Fairbury	H. H. Todt.	Seward	Agent C., B. & Q. Ry.
Fairmont	Agent C., B. & Q. Ry.	Smithfield	C. S. Rolph.
Fort Robinson	Post Surgeon.	Springview	C. L. Phelps.
Franklin	A. D. Thompson.	Stanton	Alfred Pont.
Fremont	Ernest Hahn.	Strang	Agent C., B. & Q. Ry.
Fullerton	Dr. F. W. Johnson.	Stratton	Miss Stella Vennum.
Geneva	F. M. Flory.	Stromsburg	O. Frost.
Genoa	Geo. S. Truman.	Superior	Agent C., B. & Q. Ry.
Gordon	Agent C. & N. W. Ry.	Syracuse	Agent C., B. & Q. Ry.
Gosper	E. H. Stoll.	Table Rock	E. D. Howe.
Gothenburg	W. J. Bartholomew.	Tecumseh	L. E. Pratt.
Grand Island	E. A. Barnea.	Tecumseh	Agent C., B. & Q. Ry.
Grand Island	Agent C., B. & Q. Ry.	Tekamah	Dr. A. D. Nesbit.
Grand Island	Amer. Beet Sugar Co.	Turlington	W. N. Hunter.
Grant	Cyrus Carver.	University Farm	S. W. Perlin.
Greeley	Agent C., B. & Q. Ry.	Valentine	U. S. Weather Bureau
Guide Rock	J. S. Marsh.	Wahoo	J. A. Anderson.
Haigler	Agent C., B. & Q. Ry.	Wakefield	I. H. Weaver.
Halsey	U. S. Bur. of Forestry	Wallace	Agent C., B. & Q. Ry.
Hartington	D. E. Ewing.	Watertown	A. L. Fitch.
Harvard	Dr. J. T. Fleming.	Wauweta	C. D. Fuller.
Hastings	Agent C., B. & Q. Ry.	Weeping Water	G. Treat.
Hayes Center	C. A. Ready.	West Point	J. C. Elliott.
Hay Springs	A. Kadlecck.	Whitman	Agent C., B. & Q. Ry.
Hebron	Dr. C. M. Easton.	Wilber	Agent C., B. & Q. Ry.
Hendley	F. L. Jones.	Wilsonville	Agent C., B. & Q. Ry.
Hickman	Agent C., B. & Q. Ry.	Winnebago	Rev. L. W. Scudder.
Holbrook	O. A. Olswold.	Wisner	Hoff & Dely.
Holdrege	Agent C., B. & Q. Ry.	Wymore	Agent C., B. & Q. Ry.
Hooper	T. W. Lyman.	York	Agent C., B. & Q. Ry.
Imperial	Robert Malcolm.	York	A. T. Glauque.

## ERRATA FOR SUMMARY OF 1905.

Annual summary for 1905: page 4, the date of last killing frost in spring at Valentine should be April 21: in the supplemental precipitation table the precipitation at Merriman for May should be blank, and at Wilsonville for May should be 5.66 inches. Page 5, total precipitation for the year, at Madison should be 34.91 inches, at Stanton, 38.72 inches, at Auburn, 37.85 inches, at University Farm, 36.60 inches and at Kearney, 39.04 inches. The least monthly precipitation at Madison should be 0.05 of an inch in December. Page 6, at Bartley, the mean temperature for December, and at Franklin, the mean temperatures and departures for December and the year, should be blank; at Hayes Center the mean temperature should be 32.1°. Page 7, at Bartley, the maximum temperature and date for December should be blank. Page 8: at Franklin, the minimum temperature and date for December should be blank. Page 9, at Madison, December precipitation should be 0.05 of an inch, departure, -0.57, annual precipitation should be 34.91 inches, departure, +7.10; at Stanton, annual precipitation should be 38.72 inches, at Auburn, April precipitation should be 1.96 inches, departure, -1.32; annual precipitation should be 37.85 inches, departure, +1.62; at University Farm, annual precipitation should be 36.60 inches; at Kearney, October precipitation should be 0.76 of an inch, departure, -1.18 inches, and annual precipitation, 39.04 inches, departure, +11.64; at Wauneta, annual precipitation should be 22.24 inches; at Lodgepole, precipitation and departure for June should be blank.

*Monthly, Annual, and Seasonal Mean Temperature*

YEAR	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE		JULY	
	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure
1876....	24.6	+3.4	29.7	+5.9	26.6	-7.8	49.8	+0.6	61.1	+1.6	70.1	+0.9	75.9	+1.5
1877....	18.7	-2.5	24.2	+0.4	32.6	-1.6	46.2	-3.0	57.8	-1.7	66.9	-2.9	75.2	-0.8
1878....	25.5	+4.3	34.0	+10.3	44.1	+9.7	51.4	+2.2	54.8	-4.7	66.3	-2.9	75.5	+1.1
1879....	20.9	-0.3	32.6	-1.2	40.1	+5.7	51.6	+2.4	63.0	+3.5	70.0	+0.8	75.2	-0.8
1880....	31.9	+10.7	28.3	+4.5	32.8	-1.6	48.7	-0.5	63.3	+3.8	69.0	-0.2	73.4	-1.0
1881....	10.8	+10.4	18.2	-5.6	30.3	-4.1	45.6	-3.6	64.7	+5.2	72.9	+3.7	75.8	+1.4
1882....	21.1	+0.1	32.5	+8.7	39.2	+4.8	48.7	-0.5	54.6	-4.9	69.0	-0.2	70.8	-3.6
1883....	11.2	-10.0	17.2	-6.6	33.6	-0.8	49.7	+0.5	55.4	-4.1	68.4	-0.8	74.0	-0.4
1884....	17.3	-3.9	17.5	-6.3	33.6	-0.8	42.6	-6.6	58.6	-0.9	71.9	+2.6	74.7	+0.3
1885....	12.6	-8.6	18.0	-5.8	35.6	+1.2	49.1	-0.1	63.1	-1.4	68.6	-0.6	75.1	-0.7
1886....	9.9	-11.3	27.2	+3.4	30.5	-3.9	47.6	-1.6	64.3	+4.8	69.4	+0.2	75.2	-0.8
1887....	15.2	-6.0	18.2	-5.6	37.8	+3.4	51.1	+1.9	63.6	+4.1	72.0	+2.8	75.6	+1.2
1888....	10.9	-10.3	23.4	+4.6	27.6	-6.8	52.0	+2.8	54.6	-4.9	70.1	+0.9	77.7	+3.3
1889....	22.4	+1.2	23.4	-0.4	40.4	+6.0	51.4	+2.2	58.3	-1.2	68.7	-0.5	73.4	-1.0
1890....	16.3	-4.9	35.2	+1.4	34.0	-0.4	51.0	-1.8	58.4	-1.1	72.4	+3.2	78.6	+4.4
1891....	27.5	+6.3	17.6	-6.2	26.9	-7.5	51.2	+2.0	59.4	-0.1	66.0	-3.2	70.1	-4.3
1892....	18.8	-2.4	28.1	+4.3	33.3	-1.1	47.7	-3.5	51.7	-7.8	68.4	-0.8	75.0	-0.6
1893....	23.0	+1.8	21.4	-2.4	31.6	-2.8	45.4	-3.8	55.6	-2.9	71.7	+2.5	75.7	+1.8
1894....	19.4	-1.8	19.1	-4.7	38.2	+3.8	52.0	+2.8	62.7	+3.2	71.4	+2.2	76.4	+2.0
1895....	19.0	-2.2	20.2	-3.6	35.9	+1.5	54.8	+5.6	60.9	+1.4	67.6	-1.6	72.7	-1.7
1896....	28.4	+7.2	32.7	+8.9	30.5	-3.9	51.9	-2.7	63.6	+4.1	70.7	+1.5	74.3	-0.1
1897....	21.8	+0.6	27.2	+3.1	34.2	-0.2	47.8	-1.4	61.3	+1.8	69.5	+0.3	75.9	+1.5
1898....	27.0	+5.8	30.6	+6.8	35.0	+0.6	48.0	-1.2	57.2	-2.3	70.4	+1.2	74.0	-0.4
1899....	23.0	+1.8	12.1	-11.7	26.8	-7.6	49.0	-0.2	59.6	+0.1	70.0	+0.8	73.4	-1.0
1900....	30.2	+9.0	20.8	-3.0	36.2	+1.8	51.5	+2.3	63.8	+4.3	72.5	+3.3	74.4	0.0
1901....	26.7	+5.5	21.4	-2.4	35.7	+1.3	48.9	-0.3	60.5	+1.0	70.7	+1.5	82.0	+7.6
1902....	24.8	+3.6	23.6	-0.2	39.2	+4.8	49.2	0.0	63.8	+3.8	66.4	-2.8	72.4	-2.0
1903....	27.0	+5.8	19.2	-4.6	35.8	+1.4	49.4	+0.2	58.4	-1.1	64.5	-4.7	73.0	-1.4
1904....	23.1	+1.9	24.7	+0.9	38.8	+4.4	45.8	-3.4	59.2	-0.3	66.2	-3.0	71.1	-3.3
1905....	17.1	-4.1	15.8	-8.0	43.4	+9.0	46.5	-2.7	56.2	-3.3	68.4	-0.8	70.4	-4.0
1906....	30.0	+6.8	29.4	+5.6	28.1	-8.3	52.6	+3.4	60.2	+0.7	66.7	-2.5	70.2	-4.2
Normal	21.2	.....	23.8	.....	34.4	.....	49.2	.....	59.5	.....	69.2	.....	74.4	.....

*for Nebraska, with Departures from the Normal.*

AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		ANNUAL		Crop Season (Apr. to Aug.)	
Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure	Temperature	Departure
73.5	+0.6	60.8	-2.7	48.2	-2.5	31.7	-3.9	19.6	-6.7	47.6	-0.8	66.1	+1.0
72.8	-0.1	65.6	+2.1	46.4	-4.3	32.8	-3.2	32.8	+6.5	48.5	+0.1	63.7	-1.4
74.4	+1.5	60.1	-3.4	48.3	-2.4	39.4	+3.8	19.2	-7.1	49.4	+1.0	64.5	-0.6
72.9	0.0	61.0	-2.5	54.2	+3.5	35.4	-0.2	15.7	-10.6	48.6	+0.2	66.5	+1.4
73.2	+0.3	61.4	-2.1	46.7	-4.0	23.2	-12.4	16.9	-9.4	47.4	-1.0	65.5	+0.4
78.8	+5.9	62.4	-1.1	51.1	+0.4	33.5	-2.1	32.5	+6.2	48.0	-0.4	67.6	+2.5
73.4	+0.5	65.8	+2.3	54.7	+4.0	35.5	-0.1	22.8	-3.5	49.2	+0.8	63.3	-1.8
71.3	-1.6	59.2	-4.3	46.0	-4.7	37.1	+1.5	25.6	-0.7	45.7	-2.7	63.8	-1.3
70.3	-2.6	66.0	+2.5	54.8	+4.1	36.7	+1.1	14.4	-11.9	46.5	-1.9	63.6	-1.5
69.8	-3.1	63.6	-0.1	48.6	-2.1	38.8	+3.2	31.1	+4.8	47.4	-1.0	64.1	-1.0
75.4	+2.5	64.3	+0.8	54.5	+3.8	32.3	-3.3	20.7	-5.6	47.6	-0.8	66.4	+1.3
70.9	-2.0	63.2	-0.3	45.2	-5.5	35.7	+0.1	21.9	-4.4	47.5	-0.9	66.6	+1.5
70.2	-2.7	63.4	+0.1	47.7	-3.0	35.1	-0.5	30.8	+4.5	47.3	-1.1	64.9	-0.2
72.9	0.0	59.3	-4.2	51.5	+0.8	32.9	-2.7	36.1	+9.8	49.3	+0.9	64.9	-0.2
71.7	-1.2	62.5	-1.0	50.1	-0.6	38.9	+3.3	32.5	+6.2	49.3	+0.9	66.5	+1.4
70.6	-2.3	66.8	+3.3	50.7	0.0	34.2	-1.4	31.3	-5.0	47.7	-0.7	63.5	-1.6
73.2	+0.3	65.7	+2.2	53.0	+2.3	36.6	+1.0	23.3	-3.0	47.7	-0.7	62.8	-2.3
70.3	-2.6	64.7	+1.2	50.0	-0.7	34.5	-1.1	27.6	+1.3	47.6	-0.8	63.9	-1.2
75.8	+2.9	64.6	+1.1	52.4	+1.7	38.0	+2.4	29.9	+3.6	50.0	+1.6	67.7	+2.6
73.0	+0.1	68.0	+4.5	48.1	-2.6	34.8	-0.8	28.1	-1.8	48.6	+0.2	65.8	+0.7
73.3	+0.4	59.8	-3.7	47.9	-2.8	26.1	-9.5	34.0	-7.7	49.4	+1.0	66.8	+1.7
70.8	-2.1	70.6	+7.1	53.5	+2.8	34.9	-0.7	22.9	-3.4	49.1	+0.7	65.1	0.0
74.2	+1.3	63.6	+0.1	48.9	-3.8	31.4	-4.2	23.5	-2.8	48.5	+0.1	64.8	-0.8
73.8	+0.9	64.4	+0.9	53.0	+2.3	43.4	+7.5	25.5	-0.8	47.8	-0.6	65.2	+0.1
77.2	+4.3	64.5	+1.0	56.7	+6.0	35.5	-0.1	31.9	+5.6	51.3	+2.9	67.9	+2.8
75.2	+2.3	62.4	-1.1	54.0	+3.3	39.5	+3.9	25.0	-1.3	50.1	+1.7	67.5	+2.4
71.9	-1.0	59.6	-3.9	53.6	+2.9	38.7	+3.1	21.2	-5.1	48.6	+0.2	64.6	-0.5
70.5	-2.4	60.6	-2.9	53.4	+2.7	37.0	+1.4	28.4	+2.1	48.1	-0.3	63.2	-1.9
70.9	-2.0	63.6	+0.1	53.8	+3.1	42.4	+6.5	28.3	-2.0	49.0	+0.6	62.6	-2.5
74.2	+1.3	65.9	+2.4	47.9	-2.8	40.4	+4.9	29.9	+3.6	48.0	-0.4	63.1	-2.0
72.5	-0.4	64.6	+1.1	49.1	-1.6	36.3	-0.7	30.9	+4.6	49.0	+0.6	64.4	-0.7
72.9	.....	63.5	.....	50.7	.....	35.6	.....	26.2	.....	48.4	.....	65.1	.....



## DISPLAYMEN.

STATIONS	DISPLAYMEN	STATIONS	DISPLAYMEN
Ainsworth, 260 .....	J. M. Cotton.	Loup City .....	E. S. Hayhurst.
Allamore, 41 .....	Raymond & Quivey.	Madison .....	Madison State Bank.
Anoka, 400 .....	W. Whitla.	Mason City .....	J. A. Amaberry.
Ashland, 400 .....	A. S. v. Mansfelde.	Minden .....	Joel Hull.
Atkinson, 153 .....	C. J. Wilson.	Nebraska City .....	J. T. Morey.
Bassett, 300 .....	Bassett-Springview Telephone Co.	Nelson, 650 .....	Nuckolls Co. Tel. Co.
Beatrice, 2,609 .....	W. H. Caman.	Newman's Grove .....	Postmaster.
Beemer .....	W. T. Fried.	Nora, 60 .....	Postmaster.
Bloomington, 850 .....	Postmaster.	Norfolk, 36 .....	Postmaster.
Bridgeport .....	R. H. Willis.	North Bend .....	Postmaster.
Bruning, 140 .....	Postmaster.	North Loup .....	W. G. Rood.
Callaway, 15 .....	Postmaster.	North Platte, 1,554 .....	Weather Bureau.
Chester .....	Postmaster.	Omaha, 927 .....	Weather Bureau.
Columbus, 54 .....	Postmaster.	Ong, 95 .....	Postmaster.
Crawford .....	F. C. Baumann.	Ord .....	James Milford.
Davenport .....	Croft & Snowden.	Osceola .....	G. T. Ray.
David City, 898 .....	S. Clingman.	Oxford, 80 .....	Postmaster.
Dwight* .....	J. P. Dunlap.	Palmyra, 160 .....	J. W. Wheeler.
Edgar, 485 .....	Postmaster.	Pawnee City .....	F. S. Colwell.
Ewing .....	Postmaster.	Paxton, 49 .....	H. D. Lute.
Fairfield, 15 .....	Postmaster.	Pender .....	John Forrest.
Fairmont, 150 .....	Fairmont Cr'm'ry Co.	Pierce .....	A. L. Brande.
Falls City, 37 .....	Postmaster.	Pleasant Dale, 154 .....	Rogers Lumber Co.
Fillet* .....	Postmaster.	Randolph, 975 .....	The Cash Store.
Fremont, 320 .....	Postmaster.	Red Cloud .....	Postmaster.
Gordon, 175 .....	Ranch Telephone Co.	St. Edward, 300 .....	H. Gordon Cross.
Grand Island .....	E. A. Barnes.	Scribner, 100 .....	Postmaster.
Grant* .....	Cyrus Carver.	Shelton, 325 .....	R. C. Smith.
Guide Rock* .....	Postmaster.	Sidney, 300 .....	B. A. Lathrop.
Haigler, 200 .....	A. C. Welch.	Sioux City, Iowa, 27 .....	Weather Bureau.
Harvard, 15 .....	J. T. Fleming.	Spalding, 200 .....	Postmaster.
Hebron, 700 .....	Home Telephone Co.	Springfield* .....	Postmaster.
Holdrege, 297 .....	Postmaster.	Stanton .....	A. Pont.
Hyannis, 75 .....	E. E. Lowe.	Steele City, 30 .....	Postmaster.
Imperial, 218 .....	R. Malcolm.	Stratton, 988 .....	W. F. Chamberlain.
Johnson, 225 .....	Postmaster.	Superior .....	C. E. Stine.
Kearney .....	S. A. D. Henline.	Syracuse, 360 .....	Independent Tel. Co.
Kenesaw, 145 .....	Postmaster.	Tilden .....	C. A. Smith.
Lebanon, 75 .....	Postmaster.	Valentine, 37 .....	Weather Bureau.
Lexington, 1,200 .....	I. P. Griewold.	Wayne .....	W. H. McNeal.
Liberty, 180 .....	Postmaster.	Wisner .....	Hoff & Dolly.
Lincoln, 830 .....	Weather Bureau.	York, 8,800 .....	W. B. Bell.

\* Cold-wave and frost warnings only.

Figures indicate number of addresses furnished forecasts by means of weather maps, addressed cards, rural carriers, or telephone from distributing center.

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**SOIL MANAGEMENT.**

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**BY ALVIN KEYSER.**

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## SOIL MANAGEMENT.

BY ALVIN KEYSER.

The fact is very apparent that in many portions of the state the soil will no longer produce as large crops as formerly when the land was newer. The longer the soil has been cropped the more apparent is this loss of fertility.

What causes this loss of fertility?

Careful analyses show that most of these soils have an abundance of the mineral elements of fertility. Enough, in fact, to continue the production of maximum crops for many years. In many of the eastern states it is necessary to add from \$5.00 to \$20.00 worth of commercial fertilizers per acre to keep up the fertility of the land. But here we have an abundance of this mineral fertility, still the yields of the steadily cropped lands are constantly decreasing.

The soil constituent which has been reduced by constant cultivation and cropping is the vegetable mold or humus. For thousands of years this vast prairie country was covered with grasses. These grew up and died down year after year, leaving the old growth to decay upon the ground. Every rain washed a portion of this decaying vegetable matter into the soil until through the course of time the soil has become well stocked with vegetable mold or humus to a depth of from one to four or more feet. The roots of the grass died in time and remained in the soil in a partially decomposed state, adding materially to the supply of vegetable mold. These decomposing, rotting, grass and roots form humus. Humus is dark colored, almost black, and when incorporated with the soil, gives it the dark brown or black color which is characteristic of our prairie soils.

In the process of decomposition vegetable or organic acids are formed out of the vegetable matter. These acids attack the mineral constituents of the soil, which are present in an insoluble form, and which consequently cannot be used by the plants, and convert them into a soluble condition in which they are readily taken up and used by plants. Humus, then, may be considered as a combination of vegetable and mineral matter. The plants must have the mineral matter to produce the crop. Without humus, they are unable to get it. Humus is not an element of fertility, but a releaser of fertility.

In a prairie soil fairly well supplied with humus there will be about 3½ per cent. of this material present or about 100,000 pounds per acre. This amount of humus will have combined with it about 2,000 pounds of mineral matter which is available for plant use. A similar soil which has been under cultivation for a long time without the restoration of

humus will only have about 800 pounds of the mineral fertility combined with the humus. Roughly the long cultivated soil will have about 32,000 pounds of humus per acre, a little over 1 per cent. of humus, approximately  $1\frac{1}{4}$  per cent.

As has been previously mentioned, humus is of vegetable origin. In the undisturbed prairie soils the process of rotting goes on slowly because there is not a free access of air, and there is constantly being added a fresh supply of vegetable material. This fresh supply partially rots and thus increases the amount of humus present. When the virgin sod is broken up, the air has a freer access, decay takes place more rapidly and the cultivated crops do not return as much vegetable matter as is lost by decomposition. Thus we see that land in grass is constantly becoming richer and land under the plow naturally grows poorer as it loses humus.

Humus also acts upon the physical properties of soils. The addition or loss of humus may change the texture, weight, color and water holding capacity of soils. The addition of humus to heavy clay lands makes them more friable and much easier worked. The incorporation of humus with sandy soils lessens their tendency to blow and drift. We all know that our prairie loam soils do not suffer from wind blowing when first broken up. But after a few years of cultivation they will blow badly if unprotected. Soils with a good supply of humus do not wash as badly as the same soils when deficient in humus. The humus makes the soils lighter and looser and permits the rains to soak in much more rapidly, thus saving the water for crop growth, which would otherwise run off on the surface. Humus, being of vegetable origin, acts like a sponge and increases the capacity of the soil for water, enabling the soil to endure drouth much better. It is common knowledge that our prairie soils will endure periods of drouth which would be fatal to crops on the soils of the eastern states.

Humus makes a soil more retentive of moisture at the same time that it increases the water holding capacity. This fact is illustrated in the following table:

	Per cent of water in soil.	After 10 hours ex- posure to the sun.
Soil rich in humus (3.75 per cent.).....	16.48	6.12
Adjoining soil poorer in humus (2.50 per cent.) .....	12.14	3.94

Thus it is that as humus becomes less in amount our soils are not only less able to resist drouth, but also less productive. The great problem then is to keep up the supply of humus in the soil and in that way maintain the productiveness of the virgin prairie soil.

Barnyard manure added to the soil and plowed in will decay and thus form humus. Unfortunately there are comparatively few farms in Nebraska that produce enough barnyard manure to keep up the humus supply. In a portion of the state there is too little rainfall to insure

thorough rotting of the manure. This means that in the drier years the manured soils will dry out badly, causing the crops to fire from drouth. While if the vegetable matter of the manure had been rotted sufficiently to produce humus, the soil would have been better able to resist the dry period. Barnyard manure, while of great value in contributing humus and producing fertility, cannot, with our present system of farming, be depended upon to maintain soil productiveness at a maximum or even to prevent deterioration.

To keep up the fertility and drouth resisting quality of our soils, it will be necessary to grow crops which produce more humus than they consume. The grasses, alfalfa and clover, are such crops. What barnyard manure is produced can be more profitably used as a top dressing for these crops. This can be accompanied by a system of crop rotation in which grasses, alfalfa or clover alternate, as pastures or meadows, with the cultivated crops.

An example of the value of alfalfa as a fertilizer was illustrated at the Nebraska Experiment Station. A piece of land sown to alfalfa in 1895 was plowed up and planted to corn in 1903. Another piece of land of the same size and on the same farm that had not been seeded down, but had been well manured with barnyard manure and given the best tillage, was planted at the same time and with the same variety of corn. The alfalfa land gave a yield of eighty-six bushels of corn per acre; the other field gave seventy-five bushels per acre.

The land that had not been in alfalfa was evidently in very good shape or it would not have produced seventy-five bushels of corn per acre. Poor soils do not produce such yields. Although this land had been liberally manured and well tilled, it failed to produce as much corn by eleven bushels per acre as the alfalfa land.

It may be asked, which is better for the soil, grass, clover or alfalfa? Clover and alfalfa are undoubtedly better fertilizing agents than grass, for they have the power of using the atmospheric nitrogen in their growth, and when plowed up, they leave a large amount of this fertilizer in the soil. But it does add vegetable matter, which by decomposition becomes humus, thus making the mineral fertilizing material, which the soil contains, more available.

In its physical effect upon the soil grass is much more potent than clover or alfalfa. Heavy clay soils are made lighter, more porous and more easily workable by grass than by alfalfa or clover. Such heavy soils usually have enough fertilizing matter, but it is likely to be difficultly soluble, consequently hard for the plant to get. A heavy soil is liable to be too close and compact to permit water to soak in readily and for the best development of the plant roots. Plowing under a grass sod corrects this difficulty.

On the other hand, a naturally light soil is more likely to be deficient in nitrogen and will be greatly benefited by the quantity of this material that clover or alfalfa will add to the soil.

If the soil is very badly run down, clover or alfalfa should be used whether the soil is light or heavy. If quick results are desired, this crop should be plowed under at once without cutting a hay crop. Such treatment will add a large amount of plant food to the soil, but in dry regions is liable to make the soil too loose, as it may take this vegetable matter some time to rot under dry conditions.

But the very poor soils are not so liable to be neglected as fair or good soils. On good soils seeding down is often neglected because they will produce fair crops in spite of the neglect, and it is not considered necessary to do more than manure them occasionally. If these soils are periodically seeded down they would produce from 5 to 20 per cent. better crops under the same conditions of seed and tillage.

Active and inactive humus. When a soil has been under cultivation for a long time without the addition of manure, the character of the humus is changed, as well as being reduced in amount, so that it is no longer as active as the humus in well manured or new land. This fact in itself is sufficient argument for periodically seeding down to grass.

On the Experiment Station Farm we follow a system of rotations to keep up the humus supply and quality. The regular system is either a four or eight year rotation. It is as follows:

Corn is grown two years. The third year, the land is thoroughly disked early in the spring and sown to oats. The oat crop is removed from the land and stacked as soon after harvest as possible. If the ground is sufficiently wet, it is plowed at once. If very dry, or cloddy, the land is double disked, thrice if necessary, and then plowed deeply. Disking the land not only prevents a further loss of the water by evaporation, but it also fines the surface so that fine earth is turned under at the bottom of the furrow slice instead of clods and chunks. The plow is followed on the same day with the disk or subsurface packer in order to thoroughly fill up all open spaces in the subsurface. The common drag harrow follows these tools to work the surface down into shape. After every rain the land is harrowed, as soon as it is fit to work, in order to break up any crust that may form and, by keeping a loose surface, prevent the loss of moisture by evaporation.

At the proper time for seeding, winter wheat is sown, using the press drill. Unless Hessian fly is to be fought, the wheat is drilled in about the middle of September. This method of treatment accomplishes two things: the plowed land will take up more of the rainfall than unbroken stubble and it will store it up for the use of the wheat crop. The early plowing and subsequent diskings and harrowing make a fine, well-compacted subsurface free from large air spaces and give a fine loose surface. Such a seed bed is ideal for wheat. The moisture stored up enables the young plants to make a good vigorous start and to develop a strong root system before freezing weather stops the growth. They are thus much better able to withstand the rigors of winter.

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**CORN IMPROVEMENT.**

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**BY E. G. MONTGOMERY.**

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## CORN IMPROVEMENT.

BY E. G. MONTGOMERY.

A short perusal of the little booklet describing the organization and work of the Nebraska Corn Improvers' Association will give a comprehensive view of its past record. It is difficult for any organization of this kind to state exactly just what it has accomplished for the state as there is no means of measuring influence. An illustration of what members of the association are doing themselves, which also illustrates the possibility of work along this line, is strikingly shown by the following tables. For the purpose of conducting the experiments the state was divided into sections as shown in the booklet. The members in each section for five years have been conducting a variety test of corn, each man growing ten varieties. The yield of the two best varieties which have been grown in Sections 1, 2 and 3 are tabulated below:

### SECTION 1.

	1902	1903	1904	1905	1906	Aver.
Reid's Yellow Dent .....	55.0	55.58	41.95	55.2	60.31	53.60
Hogue's Yellow Dent .....	53.5	51.52	39.88	52.0	57.77	50.93
Average .....	54.25	53.55	40.96	53.6	59.04	52.28
Average yield of corn, same counties .....		31.63	41.88	40.30	35.92	37.43

### SECTION 2.

Reid's Yellow Dent .....	40.4	60.38	62.54	61.75	65.37	58.08
Hogue's Yellow Dent.....	47.6	55.46	62.31	58.54	60.60	56.90
Average .....	44.0	57.92	62.42	60.14	62.98	57.48
Average, same counties.....		29.13	36.10	38.42	39.77	35.84

### SECTION 3.

Golden Row .....	50.24	41.48	42.81	45.87	43.70	44.82
Hogue's Yellow Dent .....	53.90	48.10	42.32	48.95	47.72	48.19
Average .....	52.07	44.79	42.57	47.41	45.70	46.50
Average, same counties.....		29.79	39.94	38.46	35.26	35.84

These yields were obtained by experimenters in each district carefully measuring the ground planted, and estimating the yield. It will be noticed that the average yields are very high, and that for the five years the average yield in Section 1 has been 53.60 for Reid's Yellow Dent, and for Section 2, 58.08, while in Section 3, Golden Row has averaged 44.82 bushels for five years. These results are the averages obtained from about twenty-seven members of the association for a period of five years. During the same five years the yields of the counties in which the ex-

perimenters lived averaged something like twenty bushels less than the yield of the experimenters. Some of the most promising results have been obtained the past year. Of ten varieties which were grown by the experimenters in Sections 1 and 2, one variety grown by five experimenters in Section 1 averaged 65.2 bushels, while the average yield of corn in that section as reported by the Labor Bureau was 35.92 bushels per acre. In Section 2 another variety grown by fourteen experimenters averaged 65.3, while the average yield in that section as reported by Labor Bureau was 39.77 bushels per acre. The higher yields obtained by members of the association is due to the fact that they were using better seed and practicing better methods of cultivation. It will be seen that the possibility of increasing our average yield twenty bushels to the acre is no idle dream, for whatever twenty-seven farmers can do in a given region for a period of five years is within the range of possibility for every one to do. The possibilities of corn culture in this state are illustrated by the results at the Nebraska Experiment Station where for five years we have averaged seventy-four bushels per acre.

	1902	1903	1904	1905	1906	Aver.
Hogue's Yellow Dent.....	75.4	75.1	80.6	65.0	75.2	74.2
Reid's Yellow Dent .....	68.9	72.2	82.8	60.8	55.0	68.0
Average, Lancaster county.....	35.0	18.0	36.6	45.0	32.2	33.4

While of course these yields have been obtained by giving better care and attention than most of the experimenters have been able to give their corn, still the results show the possibilities for corn production when the best methods are practiced. With seven million acres of corn in Nebraska an average increase of only one bushel per acre would be worth more than two million dollars per year.

While the desirability of increasing our yield of corn is easily appreciated by everyone the need of an organization like the Corn Improvers' Association may not be so apparent. However, it makes no difference how much merit a thing may have, unless it is systematically promoted it may never reach the people. On the other hand, a perfectly worthless thing or something even injurious, if well promoted, may be both extensively known and used. For example, note how worthless patent medicines, patent churns, etc., are systematically promoted and sold to the public while things of the greatest merit not so promoted are unknown and receive no attention. An example of how quickly a good thing may be introduced if systematically promoted is shown in the increase of hand milk separators among farmers in this state. It is estimated that about 34,000 are now in use averaging in cost about \$80 apiece. Most of these have been introduced in the last five or six years. Six years ago it would have been thought impossible to have induced 34,000 farmers in so short a time to invest in an expensive machine of this kind, yet when two or three creamery companies in the state took

the matter up and systematically promoted it the machines were sold very rapidly.

Everyone has noticed in the last five years the rapid spread of agitation in regard to improved methods of corn growing. Hardly a thing was heard about the subject previous to that time although a large number of the practices that we advocate today have been known for forty or fifty years. While this increased interest has been noticed by everyone it has been only known to a few that back of it all was an organized effort on the part of the Nebraska Experiment Station and the Nebraska Corn Improvers Association to promote the interests of corn growing. We too often feel that the merits of a worthy cause should be sufficient to commend it to general practice, but practical experience proves that no matter how good a thing may be it must be constantly agitated and kept before the public if its merits are to be recognized. This is the purpose and mission of the corn improvers association as expressed in their constitution, and their past work is sufficient proof of their ability to accomplish good along these lines.

The officers of this association are:

President .....	Wm. Ernst
Secretary .....	E. G. Montgomery
Treasurer .....	W. H. Wallace

#### VICE-PRESIDENTS.

- District 1—F. W. Chase, Pawnee City.
- District 2—Chas. Grau, Bennington.
- District 3—Jos. Hall, Tekamah.
- District 4—R. Hogue, Crete.
- District 5—W. W. Wilson, Kearney.
- District 6—J. D. Ream, Broken Bow.

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